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Mechanics.

"Out of nothing—nothing comes."

The laws of nature, unlike human laws, can neither be changed nor evaded; and, for want of a proper knowledge of simple and unchangeable laws, many men waste time and money in trying to produce great effects by insufficient means. The mechanical powers, as they are called, do not, and never can, create power—they only modify its application. The power most easily measured, is that of gravity, or weight; and it is the cheapest of all powers, or first movers, when, as in the case of a waterfall, nature constantly winds up the weight for us for nothing. Suppose then we have one thousand pounds of water falling ten feet in a minute. No human contrivance can make that water raise more than its own weight to the height of ten feet in the same time. It cannot raise quite as much, for the friction of the machinery must waste part, of the power: but, as it may be a part, let us omit the small fraction from these calculations.

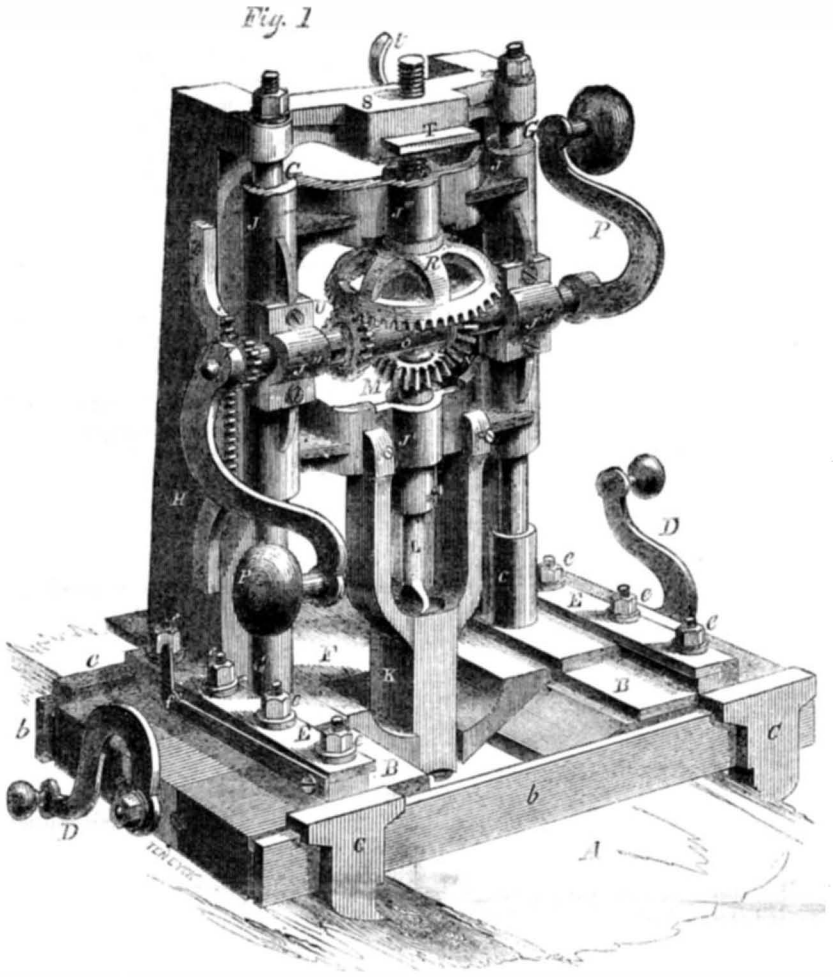
The effect of the mechanical powers is to enable us, while our original power remains the same, and the rate of its motion the same, to exert a greater power with a slower motion or a lesser power with a quicker motion. But, in all such cases, the power produced, multiplied by the speed with which it moves, will be found to give the same product. Thus one thousand pounds falling ten feet in a minute, may be made to raise ten thousand pounds one foot in a minute, the same power being required in each case; but no man can make it do more, for if he did he would create something out of nothing, which is contrary to a law of nature. For this reason all attempts to make a mechanical perpetual motion have failed, and forever must fail; as such a machine would be equivalent to making a weight raise another equal to itself to the same height in the same time, and enough more to overcome the unavoidable friction of the machine, which friction, however small, is certain, sooner or later, to stop the motion, unless additional power is applied, sufficient to overcome the friction. Therefore every man who is trying to make a perpetual motion, or any machine which he expects to do more than the power applied to work it, is wasting his time and money in that which will be certain to end in disappointment.—*Exchange.*

French Inventors' Society.

On the 16th of last month, a society was inaugurated in Paris, for the purpose of affording inventors an opportunity of bringing their inventions before the public. Weekly meetings are to be held, and the objects are good, but such an association must be managed with great discretion, or it will do inventors more injury than benefit.

KITTINGER'S BORING AND MORTISING MACHINE.

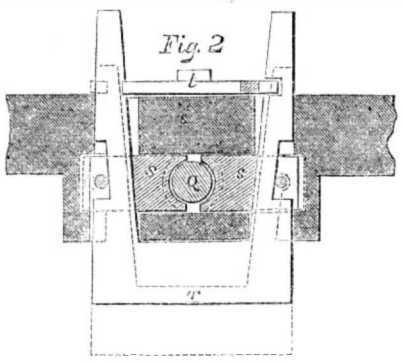
Fig. 1



This invention is an improvement on that class of mortising machines intended for hard and large work, which cut by means of an auger in a hollow square chisel. In our engravings, Fig. 1 is a perspective view of the machine, and Fig. 2 a section of the nut-screw, by which means the auger and chisel are raised and lowered. Similar letters refer to the same parts in each. A is the stuff in which the mortise is to be cut, and B, the base of the machine on which are two pair of clamps, C, operated by the handles, D, and screws, and traveling along the iron ways, *b*. On B are erected the ways or slides, E, at right angles, fastened to it by screws, *e*; in these ways slides the apparatus for boring, it consists in bed-plate F, shaped as shown in the engraving and having rising from it two standards, G, and two blocks, H, which support the rest of the machine; a pin and spring, *f*, retain this in any position on the ways, E. On one of the blocks or supporters, H, is fastened a rack, I, and on the standard, G, slides the framing, J, which carries the square chisel, K firmly attached to it and through a circular vertical journal, J′, passes the auger, L, having on the top a small bevel wheel, M, this is rotated by the bevel wheel, N, placed on the shaft, O, working in journals, J″, and turned by the handles, P. In the frame, J, is another vertical journal, J‴, in which is the screw shaft, Q, having the bevel wheel, R, at one extremity and the shaft passes through the top plate, S, in which is a movable nut represented in Fig. 2. This movable nut is in two pieces, *s*, *s*, fastened to the angular sliding piece, T, which can be secured so that the nut is either in or out of gear by the catch, *t*. On the shaft, O, there is also mounted a small bevel wheel, U, which can slide on the shaft so as to be either in or out of gear with R, and another gear wheel, V, which can slide into the teeth of the rack, I, or be free from it.

The operation is as follows: the whole boring apparatus is slid along the ways, E, over the stuff to be mortised, and the piece, T, drawn out to admit the screw freely to pass down the wheel, V, which is geared into the rack and turned to bring the auger frame, J, on to the stuff; it is then thrown out, the piece, T, pressed

Fig. 2



back and secured by *t*, the wheel, U, put in gear with R, and the handles rotated; the auger being turned, and with the chisel, let into the hole at one operation by means of the screw, Q. By moving the bed-plate, F, the mortise can be made any length. This very compact machine is the invention of Levi Kittinger, of East Greenville, Ohio, and the patent has been applied for.

History of Keys.

A paper was lately read before the British Association of Sciences, on the history of keys. The author pointed out a strip of bark or a throng of leather as the first means by which property was secured prior to the advanced state of civilization, when permanent houses were constructed, and the door and the coffer fastened with bolts, latches and bars. Homer was cited as the earliest writer who mentions anything like a key, and special reference was made to the primitive locks and keys of wood of the ancient and modern Egyptians. The iron keys of Egypt were described, and illustrated by examples from Thebes; and the curious fact pointed out, that nearly similar specimens are met with in Western Africa. After a brief notice of Greek keys, attention was directed to the Roman era, and a minute description was given of the fixed and movable locks, the dentated, piped and branched keys, and of the variously formed bows surmounting the stems. Mention was made of the small keys attached to finger rings, and of the false or skeleton key of the Roman housebreaker. The Anglo-Saxon and Norman keys were then dwelt upon, and the various forms and fashions of the key-bows, from the thirteenth century down to a later period, were described.

African Expedition up the Niger.

A new expedition has been fitted out in England for the purpose of further exploring the celebrated river Niger, which is described by the Moors under the name of *Nel el Abeed*, or the "river of slaves," and called by the negroes, *Joliba*, or the "great waters." This river penetrates far into the interior of Africa, but its source may be truly said to have never been discovered, although the lamented Mungo Park and the Brothers Landers are said to have found it.

The chief obstacle to the advance of Europeans into the interior of Africa has hitherto been the terrible climate. This has proved most deadly to the white race, and has been the great barrier to travelers and to missionaries. When the first English expedition ascended the Niger, about 1842, so great was the mortality that on its return, it is said, there were hardly enough left to throw the dead overboard. But this terrible experience did not prevent a renewal of the attempt. A dozen years later, in 1855, a second expedition sailed up the river, under Mr. McGregor Laird, who fitted out a small iron steamer for the purpose. An experienced physician who accompanied it, as soon as the steamer entered the river, began giving quinine to every man on board, in doses of about six grains. These were given every day, and continued for sixteen weeks, or all the time that the expedition was in the river, and was even kept up for a fortnight after it had crossed the bar again, and was out in the open sea. The result was that it did not lose a man! The scourge of Africa was completely disarmed. Thus fortified against the climate, the present expedition will probably be able to prosecute its voyage in safety, and we may reasonably anticipate great results from its prolonged and careful explorations.

Buried Timber.

There are many indications which go to prove that some parts of New Jersey are gradually sinking. Thus, in several of the salt marshes, great quantities of cedar timber is found at some distance below the surface, and quite a number of persons find employment in raising it for making cedar shingles. This timber in all likelihood grew on the spot where it is now found submerged, as in some places in these marshes, there are still standing trees (withered and bare) which at some period, when the waters did not rise as high as now, flourished in green luxuriance.

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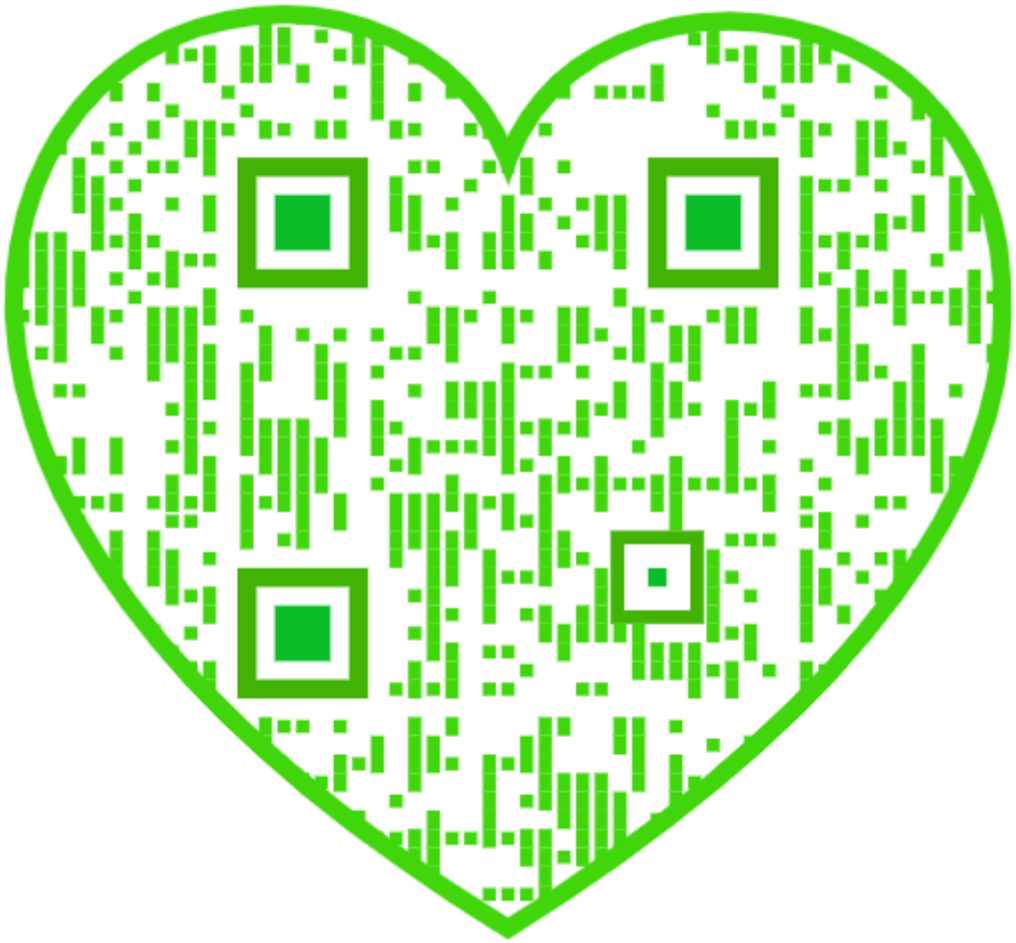

Issued from the United States Patent Office

FOR THE WEEK ENDING NOVEMBER 24, 1857.

[Reported officially for the Scientific American.]

COVERING SUGAR CANE—John Allison, of St. Martinsville, La.: I do not claim the lateral boards, A A, nor the blades, B B, nor do I claim the revolving harrows, F F, nor the roller, D.

But I claim the boards, A A, provided with the blades, B B, and revolving harrows, F F, in combination with the roller, D, arranged and operating in the manner and for the purposes as set forth.

[For information about this invention we refer to page 99.]

SLIDE VALVES FOR STEAM ENGINES—Nathan Atherton, of Philadelphia, Pa.: I claim the construction of the slide valve, with curved edges, a b, c d, e f, g h, arranged with such a lap over the faces of the steam chest that the steam shall be admitted in front of the piston an instant before the stroke has been completed, and so that the exhaust shall not be made behind the piston until after the stroke has been entirely completed, substantially as described.

PREPARATION OF ENGRAVED METAL PLATES FOR PRINTING—J. M. Batchelder, of Cambridge, Mass., and L. L. Smith, of New York City: We are aware that electrotype plates are formed by the deposit of copper in a matrix, and a back of softer metal afterwards applied to them; also, that movable types in relief have been coated with copper; also, that alto-plates (the reverse of engraved plates) have been coated with silver to prevent oxydation; we, therefore, make no claim to these processes or their products.

But we claim an engraved plate composed of two metals, one of which is iridium, and forms the face or impression surface of the plate; the other metal forming the back of the plate being copper or any metal that can be engraved with the common tools used by engravers, while the printing surface produced as herein described is very hard, and will give a greater number of impressions than the engraved plates now in use.

SCREWING TUBES IN VACUUM PANS—B. H. Bartol, of Philadelphia, Pa.: I would state that I do not claim screwing tubes into the sheets, as this has been done.

But I claim making the tubes many-sided in their interior parts, so that by the use of a many-sided long mandrel fitted into said interior, they may be placed, removed or replaced, without the necessity of having the ends of said tubes project beyond the tube sheets, as set forth.

HAY AND MANURE FORKS—G. L. Barton and A. E. Roberts, of Albany, N. Y.: We claim a hay fork provided with an upright bow, C, said bow being firmly held in its position by means of the rod, D, which rod extends from the center of the tines to the center of the bow, and thence to the handle of the fork, the tines, B, provided with double crossbars, b b', all as set forth.

[This is a light, durable and cheap implement.]

CHURN—L. W. Beecher, of Avon, N. Y.: I claim the swing valves or beaters, operating and producing the effects substantially as set forth.

ORE SEPARATOR—Wm. O. Bourne, of New York City: I do not claim the use of air for the purpose specified, either forced in continuously or in vibrating strokes, as I am aware that such methods have been used.

But I claim, first, The arrangement of a rake with scrapers alternating and revolving over a body of ore upon a seive, as described.

Second, The arrangement of the tub, B, with the bellows below the seive, in relation to each other for the purposes as set forth.

PIANOFORTES—S. P. Brooks, of Boston, Mass.: I claim combining or arranging the hammer and damper of each string, in or on one bent lever, substantially as specified.

I also claim jointing or hinging the fly or fly lifter to the hammer lever, and arranging the escapement on the jack substantially as described, the same dispensing with hinging the fly to the jack, and enabling the fly and lifter to be made or united in one rigid bar or piece.

I also claim the above described arrangement of the back catch, namely, on the jack and in rear of the escapement.

JOURNALS OF ROLLING MILLS—John Bryan, of Connington, Ky. Patented in England, Sept. 4, 1857: I would state that I am aware that cold water has been used as a lubricator for journals, and although I do not know that hot water has ever been used for this purpose, namely, lubricating, yet I make no claim to it as such in this application.

But I claim equalizing the temperature of rollers and their journals that are used in rolling hot iron, or other heated work by means of hot water applied to said journals, for the purpose of making the fibre of the metal of which the rolls and journals are made more uniform at their point of junction, and thus lessen the liability of their breaking or separating at that point as described.

ARITHMOMETER FOR ADDING—O. L. Castle, of Upper Alton, Ill.: I claim, first, The combination of the repeater X, the stationary repeater stop 17, the sliding stop bars, T 1, T 2, &c., and the stationary stop pin, w, with the driving wheel, D, or its equivalent, provided with a series of holes, e e, the whole operating substantially as described to control the motion of the register.

Second, Combining the shaft of the driving wheel, D, or its equivalent, with the keys, S 1, S 2, &c., by means of a stronger spring, y, and a weaker spring, R, and a lever, 13, deriving motion from the keys, the whole operating substantially as described for the purpose set forth.

Third, Combining the keys with the sliding stop bars, T 1, T 2, &c., by means of the wedges, 8 8, attached to the keys, the arms, U U, sliding on guide bars, V, and the collars, 6 6, and springs, 7 7, applied to the guide bars, substantially as and for the purpose specified.

Fourth, The loose teeth, r, applied to the wheels, o o, and operating substantially as described for the purpose specified.

[This is described on another page.]

COUPLINGS FOR MELODEONS, &c.—E. B. Carpenter, of Brattleboro', Vt., and E. N. Merriam, of East Poultney, Vt.: We claim, first, The employment of a single series of diagonal levers, o o, arranged relatively to and combined with the keys by blocks, L, and jacks, N N, substantially as described, whereby a single lever serves not only to couple a key with another to which it stands in the relation of octave, but with other keys with which it stands in different relations, as fifths, tenths, &c.

Second, Supporting the diagonal levers upon a fulcrum board that is arranged between the keys and valves, and applied so as to be capable of rising towards and falling from the keys, with the whole series of levers substantially as set forth.

Third, Combining the jack, N N, with the uncoupling bars, P' P', by means of the elastic connections, r p, operating substantially in the manner and for the purpose set forth.

[See notice of this improvement on another page.]

METALLIC ROOFING FOR SUBTERRANEAN VAULTS—J. B. Cornell, of New York City: I claim my improved metallic roofing, for an apartment located under a sidewalk, and a portion of a street carriage way, the said roofing being constructed of the metallic beams, G, K, L, L, I, the metallic sectional plates, B B B, and the metallic plate, C, in such a manner that the united inner surfaces of the said parts form the ceiling to said apartment, the same time that the sectional plates, B B B, form an illuminating water-tight street sidewalk, and the plate, C, forms a safe support for the portion of the carriage-way immediately over said apartment substantially as set forth.

I also claim the arrangement of my improved metallic roofing for subterranean apartments, which enables the beam, G, to serve as the main support of said roof, at the same time that the exposed portion thereof forms the street curb, substantially as set forth.

ROTATING BREECH FIRE-ARMS—Samuel Colt, of Hartford, Conn.: I am aware that in letters patent granted to Elijah Jacquith, on the 12th day of July, 1838, the many-chambered rotating breech is described and represented as turning on, and connected in place by what may be termed a central pin passing through a central bore; but in that case the parts cannot be solid because the greater part of the rotating breech is placed above the upper surface of the barrel, and the pin can only be a segment of a hollow cylinder to admit of taking sight, and for these and other reasons such a construction is not practically useful. But I do not, however, wish to be understood as claiming broadly the connection of a many-chambered rotating breech with the barrel and shield, by means of an axle passing through the central bore thereof, and inserted from the rear end.

I claim securing the many-chambered rotating breech in place by a solid pin passing through the central bore thereof, and fitted to a hole in the breech plate, behind and in a line below the bore of the barrel, so as to be inserted from the rear end and there secured, that the said breech may be properly and conveniently inserted within a cavity in the surrounding metallic frame, which connects the barrel with the shield plate, to give the required strength and support to resist the recoil, the main part of the said breech being thus placed below the barrel by an arrangement substantially such as is described.

And I also claim the adjusting of the rotating breech to the rear end of the barrel by combining therewith, and with the central pin on which it turns, a hollow screw tapped into the shield plate, and bearing against the rear end of the rotating breech, substantially as described.

MACHINE FOR CUTTING SHINGLES FROM THE BOLT—E. K. Collins, of Cambridge, Mass.: I claim the combination of the two screw shafts, D D, E E, and knives, G G, arranged relatively with each other, and with the bolt, C, substantially as and for the purpose set forth.

[This invention cuts the shingles by riving, and the knives are given a reciprocating motion, and by means of a screw shaft, the log is fed to the knives, so that a bolt may be cut with ease into shingles of any required thickness.]

SPOKE MACHINE—G. W. Cooke, of Springfield, N. J.: I would state that I do not claim the tenoning part of the machine.

But I claim the planing of spokes with rotary cutters, whose surface or circumference is divided by grooves, the edges thereby being in sections or teeth, the same acting alternately on the work, in combination with lever, F, springs, K, and cog screws, I I, for the purpose of producing the lateral and oblique movements of the cutters, substantially as described.

SHINGLE MACHINE—James Crary, of Kittaning, Pa.: I claim, first, The use of the sliding side pieces, L L, with converging slots, C, C, in combination with the upright grooves, d, in the frame in which the wrists of the shaving knives are inserted, for the purpose of effecting the gradual approximation of the shaving knives in giving the proper taper to the shingles.

Second, The combination of lever, P, with its pin, R, the projecting cam, S, and cam on the frame, L, for the purpose of communicating the requisite relative motion to the vibrating feed board, O, the driver, N, and frame L, whereby one bolt only at a time of the three riven by the frocs is driven outwards, and forced through the shaving knives, no matter how short or thin the bolt may have been froed.

STOPPING AND STARTING FERRY BOATS—Joseph C. Day, of Jersey City, N. J.: I do not claim the use of a buffer for lessening the concussion produced by the collision of a boat with a wharf or other object, as I am aware of the previous employment of such a device.

But I claim the elastic shields, G G, constructed and applied to the slip in the manner and for the purpose described.

I also claim the arrangement of the pistons or buffers, I I, grapple, i, and shields, G G', operating together as specified.

MACHINE FOR FILING SAWS—Jacob Erdle, of West Bloomfield, N. Y.: I claim, first, the two adjustable or elastic bars, G i, attached one to the permanent bar, E, and the other to the bar, f', of the clamp, and arranged as shown, whereby the movement of the saw may be fed to the file in a horizontal or curved direction, corresponding to the form of its cutting edge or to the line of its teeth as described.

Second, I claim placing the file bar, O, within the frame, N, pivoted or hung as described, so that the position of the file may be changed relatively with the saw as described.

Third, I claim the arrangement of the lever, v, shaft, M, pawls K L, wheel J, provided with ratchet teeth, o p, as shown, and the pinion, n, and rack, m, whereby the saw is fed to the file in either direction as described.

[This is a very complete saw filing machine, and does its work as perfectly as if done by the most skillful mechanic.]

PLOWS—James G. Cummings, of Columbus, Miss.: I claim the mode of making the plow standard to carry the variety of cutters and mold boards, the same consisting in the expansion of the standard at the point, A, in combination with the groove in the nose of the plow as set forth.

I also claim the compound adjustment of the mold board by the three set screws, K J S, operating upon the heel of the land-side as set forth.

SKATES—Stockton H. Evans and Ludwig Gentsch, of Philadelphia, Pa.: We claim the spurs, F F, or their equivalents, in combination with the inclined rotating spur or cam, G, which presses the heel against the spurs F F, and locks it down to the skate as described.

We also claim the adjustable plate, Q, over the fore part of the skate, constructed and arranged substantially as described, for the purpose of adjusting and tightening the straps over the top of the foot.

HARVESTER RAKE—Elias T. Ford, of Batavia, N. Y.: I claim the gathering arms, G G, in combination with the spring platform, L L, grain divider, H H Y, and gavel reel over, V, the whole being arranged in relation to and operated by the rock shaft, I, and cam, F, for the purpose set forth.

MACHINES FOR SLATING COAL—Jacob Gass, (assignor to himself and George Mowton,) of Trevorton, Pa.: I am aware that a cylinder formed of bars placed farther apart at one end than the other, so as to provide oblong slots of different widths, has been used for cleaning grain, also that a cylinder of this construction has been furnished with an intermediate perforated section, therefore I do not claim this.

But I claim the employment in the process of slating coal, of the revolving inclined cylinder when constructed with the several peculiar features for united use, to wit: checkered circumferentially near the center of its length with small square openings fur lished with narrow oblong slots from its receiving end to the checkering, and with similar but wider slots from the discharge end to the checkering end, each or every other one of its slats furnished with a beveled or V-shaped rib, internally, which only extends from the checkering to the ends of the cylinder, as and for the purposes set forth.

[This is described on another page.]

MEASURING APPARATUS OF SEED DRILLS—Oliver C. Green, of Dublin, Ind.: I claim as new and of my invention the construction and arrangement as set forth, of the sheath, C, and the slide, D, 1 2, provided with the described passages, d d, 3 3', operating as explained, in combination with the seed box, A, of a grain drill.

LEVELING INSTRUMENT FOR DITCHING, &c.—Joseph Gray, of Raymond, Miss.: I claim the combination of the two adjustable bars, D E, provided with graduated sectors, with the table, A, and bar, C, or other equivalent support, capable of being adjusted in a level position, for the purpose of laying out levels or grades in a direction transverse to the line of vision as described.

[This leveling instrument is specially intended for agricultural purposes, such as for taking levels and grades for plowing or ditching round a hill and similar purposes.

SEED DRILLS—Philip M. Gundlach, of Belleville, Ill.: I am aware that clearers have been used to work between cultivator teeth for the purpose of clearing said teeth or tubes from stubble, &c., and I do not, therefore, claim such feature broadly, but only with reference to my particular arrangement therefor.

I claim, first, the arrangement consisting of a variable vibrating slotted slide, E b, vertical adjustable plate, F, with a series of overhanging guards, e e, and downward projecting gage spurs, d d, and perforated hopper, D a, for united operation, as and for the purposes set forth.

Second, The arrangement of a series of radial arms, H H, in spiral lines directly upon the propelling axle, C, and of said axle and arms behind the seed tubes, and in such relation to the same that the arms pass successively between the lower extremities of the tubes as and for the purposes set forth.

[A description of this will be found on another page.]

FLOATING HORSES, &c., ACROSS RIVERS—S. P. Heintzelman, of Newport Barracks, Ky.: I claim the specific form of cavalry float described, consisting mainly of a pair of bags connected by girths and provided with the described fastening straps, the bags having each the form of two lobes connected by a duct, and being provided with suitable inflation tubes as represented, or equivalent devices for the purposes explained.

ARITHMOMETER—Thomas Hill, of Waltham, Mass.: I claim the use in a mechanical calculator of the series of wheels, C, D, &c., having each a double row of characters, arranged in the manner and for the purposes substantially as set forth.

Second, I claim operating the said wheels by the keys, i, the levers, F, and pawls, b, or their substantial equivalents, in the manner described.

Third, I claim the wheel, I, in combination with the arms, H and G, and pawl, l, constructed and operating substantially as described for the purpose specified.

BOILERS FOR HEATING BUILDINGS—A. E. Hitchings, of New York City: I do not claim of itself the conical water jacket, with the fire in the center.

But I claim the arrangement within the upright conical water jacket, A B, of the upright, flat sided central water chamber, D, extending nearly across the said jacket in one direction, but made narrow in a transverse direction, substantially as and for the purpose set forth.

[This boiler is of cast iron, and intended to heat water for warming purposes, such as greenhouses or rooms; it possesses great heating surface, and permits a rapid circulation of water.]

ATTACHING PADDLE WHEELS TO CANAL BOATS—Reuben Jane, of Otego, N. Y.: I claim the vertical slotted shaft, N, hung on a pivot on the bow of the boat, arranged in relation to the wheel shaft, C, to which is attached the twisted paddles, B, and gear wheel, E, for the purpose of drawing boats on canals, &c., and which are put in motion by the engine by means of gear wheel, H', arranged as set forth.

WASHING MACHINES—J. D. Jenkins, of Jacksonville, Ill.: I claim the arranging in the manner described, and relatively to each other for united use, of the rubber frame, J, rubbers, L L, roller, B 2, connecting rods, M, crank shaft, K, overhanging spring bracket, e, roller bed, B B, and variable discharge roller, B', substantially as and for the purposes set forth.

[The description of this invention is on page 99.]

VENTILATING ROCKING CHAIR—David Kahnweiler, of Wilmington, N. C.: I do not claim purifying or cooling air by passing it in contact with ice, or any mode of impregnating air with perfumes.

Nor do I claim producing a current of air by the rocking of a chair for the purpose of fanning the person.

But I claim combining a refrigerating apparatus with a rocking chair in the manner set forth.

BEAN HARVESTERS—Joshua Ketcham and John Waterman, of Orangeport, N. Y.: We claim the slide, F, for the purpose of pulling and dislocating the beans and carrying them away over the head, and this slide, F, in combination with roller, D, and levers a and b, operated by means of lever, G, rod, B, and handle, C, for the purpose of forming a bean harvester, as set forth and described.

GANG PLOWS—Joel Lee, of Galesburg, Ill.: I claim the peculiar arrangement consisting of the friction wheels, d, inclined planes, f g, and lever, K, for adjusting the plow frame to any required position, as set forth.

Second, The peculiar arrangement consisting of the flange or guard, e, and pivoted axle, a a', for allowing of the front truck to a position at right angles, or nearly so, to the hind truck, so that the machine may turn a square corner without liability of lifting the plow-shares out of the ground, as set forth.

[For description of this plow see another page.]

PAINTER'S STRIPING INSTRUMENT—James J. McCormick, of New York City, and George Crossingham, of Croton Falls, N. Y.: We do not claim broadly the employment or use of a cylinder and plunger attached to a pen, for such a device has been applied to fountain pens and analogous devices.

Neither do we claim separately the pen, F, for an equivalent device is in common use for mechanical drawing.

But we claim the feeders, I, in combination with the pen, F, cylinder, A, and plunger, B, arranged as and for the purpose set forth.

[See description on another page.]

CORN SHELLERS—John W. Morton, of Brunswick, Ohio: I claim the driving of both the exit rollers, o o', in opposite directions by means of the endless screw, L, or its equivalent operating upon the gear, M, the opposite end of one roller shaft, N, being made adjustable by the step, P, and spring, x, for the purpose of seizing the cob whether large or small, and delivering it from the machine as specified.

PENDULUM QUADRANT—Robert Norris and Frederick Peters, of New York City: We do not claim a quadrant for taking altitudes without the aid of a natural horizon.

But we claim the pendulum with its tell-tale in combination with the index, the sight tube, and the other parts of the quadrant as described.

CANDLE SNUFFERS—O. W. Stow and Augustus Barnes, of Southington, Conn.: We claim the snuffers, A B, struck out of sheet metal, the legs formed with and constituting a portion of the wing blanks, and the cutter wing, B, bent as set forth, so as to form a good cutting edge, as described.

[This is an ingenious pair of snuffers, and operates well.]

CULTIVATORS—Joseph Summers, of Raleigh, Va.: I claim the use of the hinged wings, D D, which are adjusted by rack and pinion, when arranged to move in and out over a stationary curved supporting and guide rod, E, which has two springs, F F, coiled round it, in combination with a stationary circular notched plate, J, pivoted tilting lever, K, and spring, L, which are arranged as shown, as and for the purposes set forth.

[For more information about the above we refer to a notice on another page.]

SHELVING FOR CURING AND STORING CHEESE—Jeremiah H. Phillips, of Colebrook, Ohio: I do not claim the construction of cheese shelves in double or single tiers.

But I claim the short movable shelves with the rabbeted or beveled ends thereof combined and operating with the fixed cheese shelves, in the manner and for the purposes set forth.

SASH BALANCE—Joseph R. Payson, of Covington, Ky.: I do not claim any of the parts or arrangements in themselves alone, separately considered.

But I claim combining the arrangement of cord g, and pulleys, d d d d, attached to the sides of balanced sashes b c, and frame, a, as shown, with the arrangement of the open weight or weighted tassel, e, substantially as shown, by which means the sashes can be diversely operated in counterbalance with the weight, conjointly and separately as specified, and also by which means is furnished to the trade and the public a new, economical and useful mode of counterbalancing sashes with one-fourth of the usual weight, and in the common plain frame without boxes, after the building is finished without change in the frame or injury to the finish.

SAFETY LAMPS—William Pratt, of Baltimore, Md.: I do not claim any of the devices of others which I have referred to in the specification, or profess to be the discoverer of any of the principles involved in my own devices, separately considered.

But I claim, first, Protecting the orifices of vessels used in holding, pouring and burning inflammable liquids, with a volute of ribbed metal, wound upon itself, or made of strips of plain and corrugated metal wound together, these so formed making most economically a series of regular tubes of great stability and conducting power, together with freedom of pouring through them the liquids used, and also presenting great facility of cleaning from any accidental obstructions.

In claiming the above, I do not claim protecting such orifices with wire gauze, perforated metal cylinders or chambers, packages or masses of shot, pumice stone or masses of tangled wire, or of wire packed longitudinally in tubes, as all these devices have been known before, but do not fulfill all conditions which my device does.

Second, I claim the arrangement of the feeder tube and cap, and the wick tubes and cap, either by the intersection of their peripheries or stops, suitably placed in such a manner that the removal of the wick cap cannot take place till that which covers the protected orifice for replenishing the lamp is first taken off.

PUMP PACKING—Washburn Race, of Seneca Falls, N. Y.: I do not claim to be the first inventor of pumps having a hollow shaft and hollow oscillating piston. Nor do I claim tripping the valves, E E', by means of the oscillating piston, C.

But to the best of my knowledge and belief it is a new feature, in pumps of this description, to cause a wedge piece to hold the lower valves in place, and serve also as packing for the oscillating shaft. It is also a new feature to cause the lower valves to trip the pendulous valve.

I claim causing the wedge piece, G, which holds the two lower valves, E E', and piece, c, in place, to serve also, in combination with said piece, c, as a packing for the oscillating shaft, B, as described.

[Full particulars of this invention will be found in another column.]

MAKING SEGAR LIGHTERS—Henrich Reimann, of Hartford, Conn.: I claim the arrangement of the mechanism described, and for the purpose set forth.

PROJECTILE FOR FIRE-ARMS—John B. Read, of Tuscaloosa, Ala.: I claim the surrounding of the cylindrical portion of elongated projectiles with a band of lead, or other fusible metal or alloy, filling a recess, with projections or lugs in the same to prevent its displacement, and provided with one or more vents, extending from the rear of the projectiles to the inner side of said band, for the purpose of expanding it by the gases of fired gunpowder, so as to save windage, and secure rotation by taking into rifle grooves, as more fully set forth in the specification.

TRUSSES—J. W. Riggs, of Plainfield, N. J.: I claim the construction of a pad with a knobbed or nodded face, substantially as described, so that it shall press upon several distinct points or intervals around and upon the tissues concerned in hernia, and not have a continuous bearing, and operate as set forth.

[This improvement will be found described in another column.]

SCISSORS SHARPENER—William E. Roberts, of Orange, Conn.: I claim the article of new manufacture of scissors sharpener, when constructed and fitted for use as described.

COFFEE ROASTER—Elias Schneider and A. Kolman, of New Tripoli, Pa.: We claim the combination of the agitator, as described, with the vertical cylinder containing it, as and for the purposes specified.

MACHINE FOR MULTIPLYING NUMBERS—James D. Smith, of Brantingham, N. Y.: I claim the combination of the rotating disk, A, and stationary index or bar, C, graduated and numbered as described, for the purpose set forth.

[This is a valuable calculating device for ascertaining quickly the price of articles which have a standard value.]

AUTOMATIC RAILROAD BRAKES—Alfred F. Toulmin, of Ellicott's Mills, Md.: I do not claim the application of brakes to railroad cars as new or novel.

Nor do I claim springs, or ratchet and cog wheels as new, in winding up the chain attached to brakes of railroad cars.

Neither do I claim as my invention the transmission of power derived from the revolution of the car or tender wheels.

But I claim the self-adjusting or self-regulating action of disengaging the revolving spring axle, about which the brake chain is wound up, from further contact with the motive or winding power, so soon as the brakes are put sufficiently to offer a great resistance to the progress of the cars, but before the breaking point of the brake chain is reached, this disengaging being effected by means of the tension from the combination and connection of a revolving spring axle on one end of the brake chain, and at the other end the resistance offered to the brakes by the revolution of the car wheel, substantially as described.

SEED PLANTERS—L. F. Ward, of Marathon, N. Y.: I claim, first, The covering scrapers, q q, in combination with the pressing rollers, z z, when constructed and operated as described.

Second, I claim, in combination with the furrowing teeth, e e, arranged to traverse perpendicularly, the bar g, standard, h, springs, m m, and locking latch, k, for raising, lowering and holding the furrowing teeth in the required position, as described.

Third, I also claim the arrangement of the traverse rod, N, links, o o, and springs, L L, for the purpose of operating the slides, J J, as described.

SEED PLANTERS—Caleb B. Winder, of North Lewisburgh, Ohio: First, I claim the inclined planes arranged to catch the seed carried or thrown over by the roller, and deliver it to the roller again, so that will carry it back to the seed box, as described.

Second, I claim connecting the draft rod to the beam at the rear of, or behind the wheel, in combination with the clevis yoke or staple, which allows it to vibrate as described.

STEAM PUMPING ENGINES—John S. Baden, of New Haven, Conn., (assignor to himself and Aaron W. Rockwood, of Boston, Mass.): I am aware that it is not new to so combine a pump and a steam engine that the piston of the former may be operated by the latter; also that it is not new to arrange the axis of the cylinder of a steam engine in line with that of the barrel of the pump, and so connecting the pistons of the two that a reciprocating rectilinear movement of the steam engine cylinder may create a corresponding movement of the pump piston. Therefore I do not claim such.

I do not claim a partitioned hollow semi-cylindrical

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chamber, and two series of induction and eduction passages arranged with respect to the partition of said chamber, substantially as described, in combination with three or any other suitable number of oscillatory cylinders and pistons connected together by three connected cranks, and applied to the partitioned semi-cylindric vessel as described, such being the subject of claim in my Letters Patent.

Nor do I claim the rotary pump, for which a patent was granted to Hosea Lindsay, December 4, 1855.

Nor do I claim the reciprocating pump represented in Henry L. Russell's application for a patent, rejected October 25th, 1854, for in neither of the engines of McMurtrie, Lindsay and Russell is there any three-fold bell crank, and these pumps operating together, and in connection with a semi-cylindric case, I employ three pumps, one semi-cylindric case, and with one engine, made as specified: the semi-cylindric case connecting all the pumps together, so that the fluid which each pump may elevate, is drawn into one end of the common case, and forced out of the other end of it, while but one three-fold crank is used in the construction of my apparatus.

Therefore, It is this peculiar apparatus, as composed of the three pumps arranged on one common case, and combined with the peculiar steam engine, in manner as described, and so as to cause but one three-fold crank necessary to the operation of the three pumps during each entire revolution of the crank that I claim.

VAPOR BURNING LAMPS—Dexter H. Chamberlain, of West Roxbury, Mass., (assignor to himself and John Borrowscale, of Boston, Mass.): I claim the auxiliary chamber or casing, 5, in combination with the tube, 4, constructed and arranged in the manuer and for the purpose set forth.

WASHING MACHINE—David Elliot, of Pembroke, N. H., (assignor to himself and Isaac White, of Merrimack Co., N. H.): I claim a tube or vat, with corrugated parallal sides, and a semi-circular or curved bottom, in combination with semi-circular rubbers, corrugated on their sides, and arranged to traverse on the axle, or on a traversing axle, provided with a spring, to draw the rubbers one towards the other, and both towards one side of the vat, in the manner described, for the purpose of washing and squeezing clothes.

MACHINE FOR FEEDING FLOUR, MIXING MATERIALS, AND KNEADING DOUGH—John Hecker and William Hotine, (assignors to John Hecker,) of New York City: We claim the employment of the rotating disk, with its slot and cutter or scraper, one or more, as described, in combination with, and forming the movable bottom of, a vessel containing a supply of flour, to dellver the flour in regular given quantities, as set forth.

We also claim, in combination with the rotating disk or bottom, substantially as described, the making of the feeder or vessel, containing the supply of flour, conical, and with the lower end largest, as described, to prevent the packing of the flour, as described.

We also claim, in combination with the feeder, or its equivalent, and the mixing trough, the inclined revolving plate for scattering and distributing the flour at or near the periphery of the mixing trough, as and for the purpose specified.

We also claim, in combination with the mixing trough and the flour distributor, the revolving channel-way along the under side of the distributor, for distributing the water or other fluid, and the water at or near the periphery of the mixing trough, as described, to ensure the proper admixture of the ingredients, as set forth.

We also claim, in combination with the flour and water feeders, or their equivalents, the apparatus, or any equivalent therefor, for feeding and supplying the sponge, or other leaven, at or near the periphery of the mixing trough, as specified.

And finally, we claim the revolving blades and stationary pins or blades, substantially as described, in combination with a mixing trough, having a discharge aperture at or near the center, and the means described or their equivalents, for feeding the flour and mixing fluid at or near the periphery of the trough as described, for mixing the ingredients as they are received, and gradually working and kneading them, and forcing them towards the center, where the dough is delivered, as described.

PREPARING GLUE STOCK—Obadiah Rich, of Cambridge, Mass., (assignor to Peter Cooper, of New York City): I claim the cleansing of glue stock-pieces, and preparing them for the manufacture of glue, by the use of soda or potash, as set forth.

I also claim, in combination with the above, the use of a mineral acid, for the purpose of effectually removing and neutralizing the alkali in the stock so prepared, as set forth.

ARRANGEMENT OF CYLINDERS AND THEIR CONNECTIONS FOR LOCOMOTIVE ENGINES—Aaron Smithurst, of Philadelphia, Pa.: I claim the arrangement of the two double piston cylinders described, with their connecting means, in relation to the frame of the engine, as set forth.

WASHING MACHINE—Thomas A. Dugdale, (assignor to himself and George Taylor,) of Richmond, Ind.: I am aware that vibrating tubs, with stationary lids or disks, are now in use—such parts, therefore, of themselves, I do not claim.

But I claim the combination of the floating disk, F, cords, f f f f, and vibrating tub, C, with the stationary disk, E, substantially in the manner and for the purpose set forth.

ROTARY CHAIRS—Jordan L. Mott, of Mott Haven, N. Y., and William Tabele, of New York City, (assignors to The J. L. Mott Iron Works, of Mott Haven, N. Y.): We do not claim the special form of the parts, as these can be variously modified and still retain the mode of operation which we have invented.

Nor do we wish to be understood as limiting ourselves to the use of our said invention in a rotating chair of the construction specified, as it will be obvious that it is equally applicable to all rotary chairs.

We do not claim as our invention any of the separate parts above described, such as the pivot attached to the chair seat, and fitted to turn in the socket in the upper part of the pedestal.

But we claim the combination of the securing ring substantially as described, with the flanch projecting from the spindle of the pivot, which is fitted to turn in the socket on the upper end of the pedestal, as and for the purpose specified.

RE-ISSUE.

WATCHES—Geo. P. Read, of Waltham, Mass. Patented April 14th, 1857: What I claim is the arrangement of the barrel in respect to the pillar plate, so that it shall extend through the plate and be fastened to the dial side of it.

I also claim arranging the main gear wheel with the retaining power and barrel arbor, so that the said wheel shall serve the purpose of a barrel head or cover to the barrel.

I also claim the application of the retaining power directly to the fixed barrel, as specified.

Laser.

This substance is a gum resin, and was greatly esteemed by the ancients; it was obtained by them from the north of Africa. It is described under the name of *silphion*. Different names were given to different parts of the plant which affords it, the term *laser* or *lasooin* being exclusively applied to the inspissated juice. From the representations of the plant upon old coins, it appears to be one of the out-spreading plants, with large foliage, and not very high. The gum was used for embalmment and incense.

A Combined Propeller and Pump.

MESSRS. EDITORS:—In Vol. XIII, No. 4, SCIENTIFIC AMERICAN., under the heading, "Inventors to the Rescue!" you have an article in which, after alluding to the loss of the *Central America*, and the lives of many of the passengers, you make an earnest appeal to inventors to produce pumps that will not choke, and reliable life-preservers. In the next issue, No. 5, you publish the claim of Ethan Campbell, assignor to Wm. P. Page and Edward F. Hodges, for a marine propelling apparatus.

Having been an eye-witness to the performances of a boat fitted with this propeller, and now owned by the proprietors of the patent, and having become familiar with its operation and capabilities, I believe it will fully meet the requirements of your appeal. The apparatus consists of two cylindrical cases, placed athwartships within and upon the bottom of the vessel, each case provided with two curved induction passages, which communicate with the water without.

Through the axis of each case a shaft extends, to which two circular plates are attached eccentrically within. An inner cylinder is fitted to revolve upon the circular plates, and to this cylinder is attached a wing or plate extending downwards between the two water passages. The rotation of the shaft produces an eccentric revolution of the cylinder, which thus becomes a perpetual float or paddle under constant pressure. The volume of displacement, by a case or cylinder of eight feet diameter and eight feet length, at sixty revolutions per minute, is equal to that of a side wheel of twenty-four feet diameter, and nine feet length of paddles, at twenty revolutions per minute, but is more effective, because at the bottom of the vessel. Working within a resisting radius of four feet, instead of one of twelve feet, it will also allow of a great reduction in the size of machinery, weight of shaftings, and space for the generation of steam. From its position at the bottom and within the ship, it is entirely removed from all danger of damage by collision, must always work with perfect uniformity in storm or calm, and offers not the slightest impediment to the progress of a ship while under sail. A valve fitted to the forward induction passages, when closed, cuts off the water communicatlon: another valve, opening from the induction passage into the hold, then being opened, each propeller, with a cylinder of the size above mentioned, would relieve the hold of one hundred thousand gallons of water per minute, at sixty revolutions. Here, then, is a pump of great effectiveness, that will not choke. Again, this propeller produces no perceptible agitation of the water on the surface, and is believed to be perfectly adapted to all purposes of towage upon canals.

The boat herein mentioned, with an engine of seven horse power, driving a propeller of twenty-eight inches length and diameter of case, makes six knots per hour, and leaves no disturbance of the water more than if driven by wind. The proprietors seem confident that they have a propeller which, in effectiveness, safety from casualties, and security to life and property, is invaluable.

Wm. Page, Esq., of Nos. 99 and 101 Commercial street, Boston, will probably be happy to afford any information regarding this invention. P. JOHNSON.

Boston, Mass., Nov., 1857.

That Famous Decision.

MESSRS. EDITORS:—In your issue of the 14th inst., it is stated, in commenting on the decision of the Commissioner of Patents in the appeal case of Daniel D. Badger, that the report of Mr. Baldwin, as one of the Board of Appeal, was set aside. This is a mistake, as will appear by reference to the report of Mr. Baldwin. Both of the Examiners constituting the Board reported adversely, and their decisions were both confirmed by the Commissioner's decision. In the report of Mr. Baldwin, however, he stated his understanding of the construction of the law, and the general practice of the Office under it, and requested the Commissioner to express his opinion respecting the propriety and correctness of such a construction and practice, "with the hope," as he remarks, "of establishing a more uniform rule of action than has heretofore prevailed in the Office in regard to this class of inventions," namely, "a new article of manufacture." F. F.

Washington, D. C., Nov. 24, 1857.

[In justice to Examiner Baldwin, it is proper to say that there was a technical error in our remarks above alluded to. We stated that his report was set aside; but we should have qualified our remark. That portion of his report which denied the prayer of the applicant was confirmed by the Commissioner. But the opinions of Examiner Baldwin upon the general subject involved, and which occupied the main portion of his report, were not confirmed. —EDS.

Phosphorescent Animals.

There are many varieties among the forms of life that emit from their surfaces and various parts of their bodies a powerful luminosity, and are called phosphorescent. It has been supposed by some naturalists to be the result of electrical action, and by others as the result of a peculiar construction of the part giving out the light, so that it will absorb a great quantity of light from the surrounding media in which they live. Both of these may be true in regard to different species of animals. Most of the luminous beings belong to the invetebrate classes, and frequently render vast portions of the ocean, one sea of fire, by their prodigious numbers. The most common are the glowworm, the phosphorescent seapen, and the brilliant pyrosome, usually found in the Atlantic's rolling waves.

Striping Tool.

This is a neat and perfect little tool for painters. It will stripe any line from almost a hair to two inches, and is remarkably simple in its construction. The paint is fed to the markers by means of a piston working in a cylinder, and it will supply the paint to overhead work with great facility; there is a bar and point attached, so that it can be made to stripe circles or curves. This tool should be in the hands of every painter who has any striping to do. It was invented by George Crossingham, of Croton Falls, N. Y., and James J. McCormick, of New York City, and will be found described in our list of claims this week.

Sash Balance.

This patent, lately granted to John McMurtry, of Lexington, Kentucky, on a sash balance, is worthy of notice. With his arrangement of cog gearing, the sashes can be operated and balanced together, or either the upper or lower one raised or lowered and balanced by itself at any position desired, and locked so as not to fall. Both sashes can be locked down at night by the same knob and catch by which they are operated and held open. This improvement dispenses entirely with cords, weights and box framing, and is better, as each sash can be operated separately.

Coal Slater.

This machine accomplishes that which has heretofore been done by hand labor. viz., the separation of slate from coal. The slotted cylinder allows the oblong pieces of slate to escape; the beveled ribs insure the escape of the same, by preventing their motion, and causing them to assume a vertical position; and the checkered grating allows the slated coal to escape, without any slate whatever passing off with it. It is the invention of Jacob Gass, of Trevorton, Pa.

Pumps.

A new pump has been patented by its inventor, Washburn Race, of Seneca Falls, N. Y., which belongs to that class of pumps in which an oscillating or rocking piston is employed, the water being discharged through a hollow central shaft. The improvement consists in causing the wedge which holds the two lower valves in place to serve also as a packing for the oscillating shaft, and in causing the lower valves, in the act of tripping, to strike against the pendulous valve and trip that also.

Cultivator.

This implement posseses several advantages, its wings being capable of expanding or unfolding automatically to any extent desired, and then automatically locking themselves, so as to remain firm and steady. By thus being self-acting, the farmer is saved all labor of adjusting, excepting the simple elevation of a lever, and thus all necessity of changing his position from behind the handles is avoided. Joseph Summers, of Raleigh, Va., is the inventor and patentee of this device.

Seed-Planting Gang Plow.

This improvement provides for the turning of the plow without drawing the shares out of the ground; it also provides a very effective, convenient and simple means whereby to raise the plows out of operation. It likewise provides for keeping the tubes cleared of stubble and grass—as a whole, we think, it is a good implement. It is invented by Joel Lee, of Galesburg, Ill.

Washing Machine.

In this machine the clothes are subjected to an anti-friction pounding and squeezing action and thereby thoroughly cleansed from dirt without any more wear than when washed on a hand-washboard. Provision is made for discharging the clothes faster or slower according to their nature. It is the invention of John D. Jenkins, of Jacksonville, Ill.

Seed Drill.

This improvement enables the farmer to plant with the same machine corn, oats and wheat, and in fact, all descriptions and sizes of seed, in the most regular and perfect manner. It also effectually clears the tubes of all stubble, and enables them to operate with certainty. This is really a good improvement, and one much needed. It is the invention of Philip M. Gundlach, of Belleville, Ill.

Cane Coverer.

This implement is adapted for covering cane and other seed, after the furrows have been opened by a plow and the seed deposited. It covers in the seed, forms the ridge and leaves the soil in a light pulverized condition. With it, more work can be done in a given time, and in a better manner, than with two plows. It is the invention of John Allison, of St. Martinsville, La.

Arithmometer.

O. L. Castle, of Upper Alton, Ill., has invented a new arithmometer, by means of which the operator can, by playing on nine keys, add any numbers together, and their result will be indicated on a dial. The ordinary ratchet arrangement is employed, and the extent of the addition is regulated by the number of index wheels, which can be increased at pleasure.

Improved Trusses.

The pad of these trusses is composed of a number of small knob-shaped projections, which press more directly on the part than with the ordinary truss, and the force of the spring is more properly distributed. It is the invention of J. W. Riggs, of Plainfield, N. J.

Melodeons.

An improvement has been patented in these beautiful instruments, whereby any note can be connected with its octave, their or fifth, so that by striking one key it will at the same time play other notes. It is the invention of E. B. Carpenter, Brattleboro', and E. N. Merriam, of East Poultney, Vt.

Hydrophobia.

A man was cured of hydrophobia in Italy lately, by swallowing vinegar, in mistake for a medicinal potion. A physician at Padua heard of this, and tried the remedy on a patient; he gave him a pint of vinegar in the morning, another at noon, and a third at sunset, which cured him.

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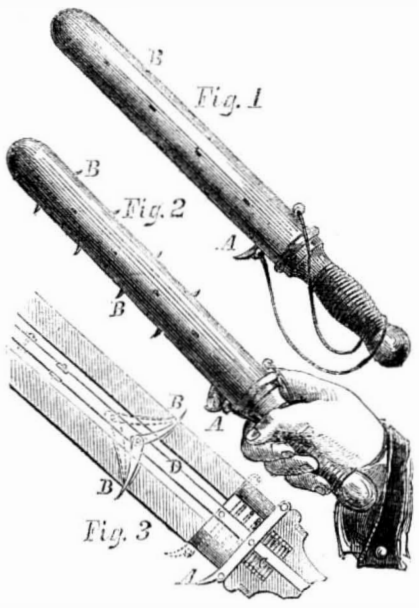
New Inventions.

McLarty's Policeman's Club.

This club, which has been refused a patent by the Commissioner of Patents (whose report and our remarks thereon will be found in another part of our columns), is especially intended for the protection of policemen and constables. Fig. 1 represents the ordinary club, B, with the defensive attachment. It is made hollow, and around its surface are a number of small perforations, through which, when it is grasped by any one trying to wrest it from the policeman, the latter can, by pulling the trigger, A, force out a number of small spikes as seen in Fig. 2. These spikes entering a short distance into the attacker's hand force him to let go his hold, and the policeman loosening the trigger, the spikes fly back.



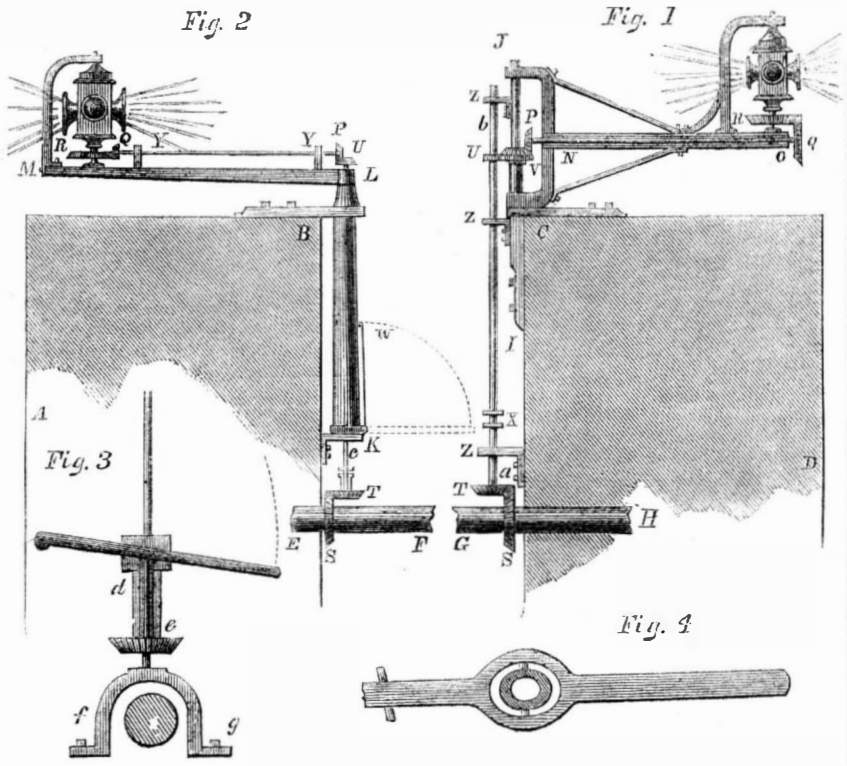
The manner in which this is done is seen in Fig. 3, which is a section of the club. C is a spring against which the trigger has to be pulled, and by the bars, D, it brings out the spikes; when the hold on the trigger is relaxed, the spring forces them back. There are two eye-holes in the trigger to admit of the strap that passes around the arm, so that if the club is attempted to be violently pulled from the owner, and he has no chance of operating the trigger, it will be operated by the strap. It is the invention of John McLarty, of New York, and is exciting a great amount of interest throughout the country generally. It is almost unanimously admitted that these clubs ought to be at once adopted by the police of every city in the world.

Improved Signal Lights.

This improvement in signal lights is especially intended for steamboats. In our engravings, Figs. 1 and 2 represent vertical sections through the wheelhouse. In them, E F and G H represent portions of the main shaft. In Fig. 1, I J is a stout iron or wooden post fastened against the side of the wheelhouse directly over the main shaft. On the upper part of this post is fitted the moveable arm or bracket, N O. To the main shaft is fitted the bevel wheel, S, and to the lower end of the rod, *a b*, is fitted a corresponding wheel, T; U is a small pinion on *a b*, which gears with the spur wheel, V, which in turn gives motion to the wheels, P and Q, and so revolves the lamp, R. It will be seen that a rotary motion is given to the lamp, when the main shaft is in motion and *a b* connected. It can be disconnected by a lever acting between the bosses, X, which will elevate the rod in the guides, Z Z Z.

Fig. 2 is another arrangement for the same purpose. In this, K L represent a hollow shaft on which is firmly fastened the arm, L M, on which is the lantern. The hollow post is secured to the wheelhouse by the straps, K and B, and it can turn freely in them, the other parts being the same as in Fig. 1. The lever, K W, when drawn down, will turn the frame in any required position around the shaft, *c* U. In Fig. 1, the arm or bracket, N O, may be operated by cords from the wheelhouse, but in this device the rod, *c* U, does not lift up as in Fig. 1, but in its place the lower end is made square, and on it slides the short tube, *d e*, shown in Fig. 3. The lower end of the rod turns on a bridge, *f g*, spanning the main shaft. On the upper end of the tube, *d e*, a lever is attached by means of boxes and collars as shown in Fig. 4. This lever when raised carries with it the beveled wheel, T, thus disconnecting the gearing apparatus.

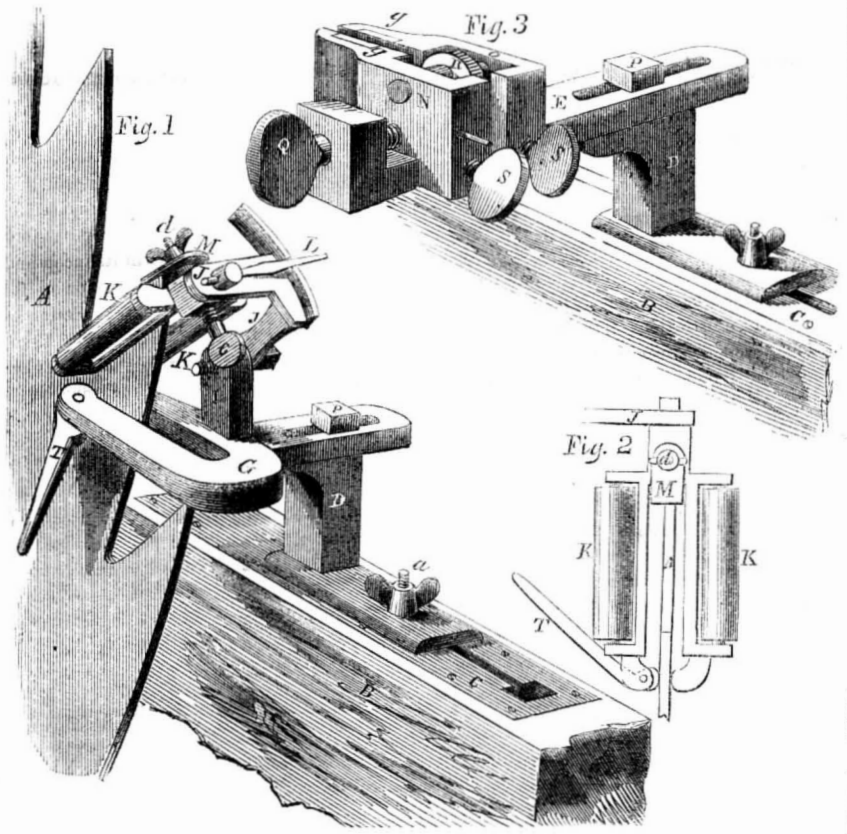
POTTS' IMPROVED SIGNAL LIGHTS.



These signal lights are intended for use on vessels propelled by steam, and those exclusively. The glasses in the lamps could be colored variously, and by alternately revolving them and checking their motion, a code of signals could be arranged; besides they will specially indicate the presence of a steamer, and there will be less likelihood of mistakes and consequent collisions than at present.

They are the invention of Albert Potts, northeast corner of Third and Willow streets, Philadelphia, from whom further information can be obtained, and who patented them Sept. 8, 1857.

ANDREWS' MACHINE FOR FILING SAWS.



It is absolutely necessary that saws should have their teeth set with regularity and certainty, and it is almost an impossibility to do this perfectly by hand. The invention which is the subject of our engravings is a machine for effecting this with the precision that machinery can only attain.

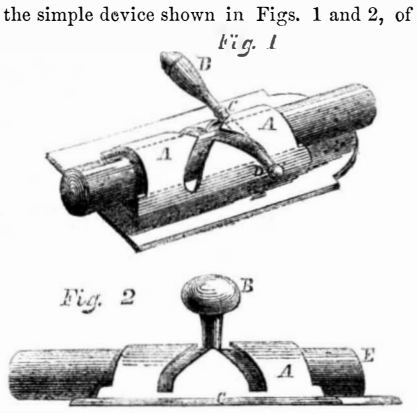
Fig. 1 is a view of the arrangement used for filing, Fig. 2 is the essential part separated, and Fig. 3 is a representation of the gaging apparatus. A is the saw, and B the bench in which a slotted piece, C, is set, and to this the invention can be secured. D is a piece which carries the apparatus, and is fastened to it by means of the screw pin, P; this piece, D, can move along the slot to accommodate itself to the saw, and it is fixed by the screw, *a*. In Fig 1, G is a horse-shoe shaped piece of metal, between the two arms of which the saw passes, and it has on one end the cam and lever, T, by which the saw is held tight in its position when fixed. G also has on it the standard, I, carrying by means of a hinge screw the bent frame, J, and on this is mounted a frame with two rollers, K, capable of being turned by the pointer, L, which moves along a graduated or other scale; this will incline the rollers to any angle in relation to the edge of the saw teeth, and it is by pressing the file on these rollers that the proper "rake" is given to the teeth of the saw. When once in the proper position they are retained so by the screw, *c*, being screwed tight. M is a plate against which the teeth are placed, and it prevents them from projecting too much beyond K; it is connected by the screw, *d*, All this, however, will be better seen by reference to Fig. 2.

The setting gage is represented in Fig. 3, which consists of two jaws, N O, movable upon the arm, E. O slides in a groove in N to regulate the width of the set of the saw, A, the two being firmly secured together by the set screw, R. An adjusting screw, Q, is provided in a projection on the end of the arm, E, which is fixed in the side of the jaw, N, by a pin, and by means of it the jaws are drawn back and forth on the arm to adjust the opening to the saw; two set screws, S, tighten them on the arm. A recess is made on the inner side of each jaw, in which a piece of file rubbing stone or hone, *g g*, is secured. These surfaces being adjusted to the exact width of set required (that is, the space of the key) that the saw is to cut, the teeth are set by any ordinary means until the points will touch the file or rubbing surfaces, *g g*. As it is impossible to get the set of every tooth exactly correct, and as the point is liable to be left with a burr in filing, the tendency of which would be to scratch and injure the lumber sawed, the rubbing surfaces, *g g*, will, by slowly revolving the saw between them, reduce them to a perfect uniformity and a smooth finish adapted to the best kind of sawing.

One of these was on exhibition at the Crystal Palace during the Fair. It was patented on the 14th July, 1857, by the inventor, Emanuel Andrews, of Elmira, N. Y., from whom all further particulars and information may be obtained.

Patent Lever-locking Bolt for Doors, &c.

When a bolt "pushes hard," the power exerted to push it not being in the line of the axis of the bolt, but upon the end of a handle projecting at right angles from the bolt, it causes the bolt to bind still tighter upon the guard, and is necessarily exerted to a great disadvantage, and usually, in such cases, the bolt "goes up" with a jerk, at the risk of breaking some part of the bolt, and injury to the hand. These difficulties are obviated by the simple device shown in Figs. 1 and 2, of



making the slots in the guard of the bolt oblique to its axis, by which the handle becomes a lever for pushing the bolt, with a safe and easy motion to the hand. Letters Patent were granted for this improvement, July 21, 1857.

It will be seen that the locking and the leverage are attained without the addition of a single piece, or fraction of expense, over the common bolt. The cost of material and manufacture is the same for both.

In Fig. 1, A is the guard of the bolt, E, in which moves the loose handle, B. This handle plays freely in a hole through the bolt, and is checked in its motions by the shoulder at C, and the swell, D, on the lower end. The bolt is represented as locked, and to unlock it the handle is raised up until the swell on the end is within a countersink in the bolt, and the handle is then used as a lever to move the bolt through the oblique slots.

Patents have been taken out for these bolts in England, France and Belgium. License may be had to manufacture these bolts, or the patents purchased, on application to Professor Charles G. Page, Washington, D. C., opposite the city Post-office.

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Scientific American.

NEW YORK, DECEMBER 5, 1857.

Loss of Heat in Steam Boilers.

It is a positive fact, not very creditable either to the genius of our age, or the economical habits of those who use steam, that at least one half of all the useful duty which may be obtained from fuel is lost or thrown away. In scanning the surface of a manufacturing city or village, from a neighboring elevation, volume after volume of steam is seen rapidly shooting up in clouds from a hundred sources, as if it cost nothing, and was only fit to be thus "cast out." Those who thus waste steam do not seem to know that every thousand pounds of water generated into vapor, and thus allowed to escape at fifteen pounds pressure on the square inch, involves the loss of at least one hundred pounds of coal, under the very best boilers in use. The loss incurred in this waste of steam in working engines, taking into account the vast number which are employed throughout the country, must amount to several millions of dollars annually. But there is another great source of loss in steam boilers themselves, and this is much greater than the other—we mean the small quantity of steam generated in boilers in proportion to the fuel used. If we enquire into the quantity of water which one pound of the best coal can evaporate into steam, under the most favorable circumstances, we find that it amounts to from twelve to fourteen pounds, whereas the quantity of water generated into steam under the very best boilers in use, does not exceed ten pounds, or nearly thirty per cent. less. But although this is a great loss, it would not excite so much surprise, if the majority of steam boilers worked up to this standard; the case, however, is far otherwise. There are but few steam boilers which are thus economical—not one in a thousand perhaps—the great majority of them do not evaporate seven pounds of water to one of coal consumed, and a vast number, we are assured, do not evaporate five pounds of water. Now here is a subject, not for speculation, but practical effort. When we take into consideration that many thousand engines are now employed, throughout the extent of our country, and reflect that at least fifty per cent. of the fuel used in them is wasted, or lost, surely, it requires little to be said in directing attention to this field, as one inviting to all those who would open a rich mine of wealth to active industry—every dollar saved in economising power, being just so much gain to the whole community. It is true that much has been done in introducing improvements for saving fuel and steam, and it is not too broad an assertion to make, that at least twenty per cent. of fuel is now saved, in comparison with the amount consumed ten years ago, in most boilers; this result has been accomplished, chiefly, by the extended use of multitubular flues, and the more careful enclosing of the boiler, with good non-conducting covering to retain the heat, but for all this, greater improvements have yet to be made before the goal of perfection will be reached in economising steam fuel.

It has been calculated by those who have devoted attention to this subject, that at least $40,000,000 are expended annually for the fuel of our steam-engines, one half of which sum is actually money lost or thrown away. The very consideration of this fact is somewhat astounding, and imparts a phase, almost akin to insanity, on the part of all those financially interested in fuel consumption. All kinds of coal will not evaporate fourteen pounds of water per pound, but Cumberland coal, which is equal to the best Newcastle, *will;* and if, in the best boilers, there is nearly thirty per cent. of loss with the best fuel, the conclusion at which any person must arrive, in view of this fact, is that, under all our steam boiler's, burning all kinds of fuel—wood, coal, &c.—there is a monstrous loss continually going on, which ought to be, and no doubt will yet be, curtailed.

Decision of the Commissioner of Patents. The Policeman's Club.

United States Patent Office,
November 14, 1857.

On appeal to the Commissioner from the decision of the Examiner, rejecting the application of John McLarty for Letters Patent for an improved "policeman's club."

The model of the "club" on file is twelve inches long, is round, and about an inch and a quarter in diameter. It has a smooth and polished surface, and resembles the baton generally borne by police and other officers. In practical use it would be lengthened, and would, no doubt, in accordance with the views of the inventor, generally take the form of an ordinary walking cane. Its exterior gives no indication of its real character or capabilities. Its barrel is hollowed, and within it is an ingenious mechanism connected with four longitudinal rows of "spurs or lancets," which lie concealed in the tube. On touching a spring, these lancets leap from their hiding-places, and through them, by a single wrench of the weapon, a most fearful mutilation is inflicted on the hand of any adversary that may have grasped it. In the technics of street rencounters, it may then be "clubbed," and its lancets made to bury themselves, at will, in the head and body of the victim. Its operation must prove as instantaneous as it would be irresistible. The professed object of the inventor, in fashioning this club, was to supply what he states has long been a desideratum, to wit: a weapon not deadly—dispensing with the necessity of a resort to pistols—which policemen might use effectively, but which could not be wrested from them by the rowdies and malefactors with whom their official duties might bring them into conflict. There are on file the depositions of the Superintendent and Deputy Superintendent of the New York City Police, fortified by the certificates of fifteen members of the *corps*, all of whom concur in stating that this club will accomplish the end proposed by the inventor. They also declare, most emphatically, that they regard it as an important and valuable improvement; and a part of them express the opinion that it is not only *harmless*, but *humane*. These views have been carefully examined and considered, but they have not seemed the less startling, because of the sincerity with which they are unquestionably entertained. They present a strange, if not a melancholy illustration of the power of professional prejudice over the higher convictions and gentler impulses of our nature. The purpose sought to be attained by the inventor—the safety of the conservators of the public peace, and their triumph in contests with lawless men—is one which must command the approbation of all good citizens; but even this end may become unhallowed, from the means employed to attain it. The law, happily, enjoys a wider range of vision than that which these witnesses seem to have allowed themselves; and while it would gladly secure the protection of all, it unhesitatingly recognizes the fact that it has the charge of interests, social and political, compared with which, even the safety of policemen is but as the dust of the balance.

Justice to the inventor demands the admission that the mechanism of this miniature infernal machine displays sufficient novelty to support a patent. The law, however, in its wisdom, has declared that something beyond mere novelty must be established before a patent can issue. The invention must not only be new, but it must be important and *useful*. It should be distinctly stated at the threshold of the inquiry, that this instrument, with a view of mitigating that abhorrence with which the over-humane might regard it, disclaims all designs upon human life, and moderates its ambition in the drama of blood, to the more humble work of mayhem and laceration. Thus operating, the testimony on file shows that it would be eminently *useful to policemen*. Conceding this assumption, it is still obvious that this is too limited a measure of utility to satisfy the requirements of the law. An invention to be patentable must not be useful to the few, with a chance of being pernicious to the many, but it must clearly appear *that in view of the interests of the whole community*, the good resulting from it would *decidedly* preponderate over the evil. If the officers of public justice, and those law-abiding citizens who love peace and pursue it, could be induced to defile themselves with this instrument, and could its use be restricted to such, it might be comparatively harmless; but when it passes from the workshop of the mechanic who has fashioned it, it is manifestly beyond the control of the government, and will find its way into the service of the brawling profligate, as certainly as the stiletto seeks the belt of the bravo. Its manufacture and distribution through society, under the expectation that good would result therefrom, would be an act of folly, equaled only by that of strewing our pathway with thorns, in the delusive trust that they would bud and blossom into flowers at our approach. It is barbarous in its every characteristic, and is as repugnant to the genius of our institutions, and to the morality of that faith in whose shining footprints our legislation strives to follow, as is the scalping-knife of the border savage.

As national war is one of those scourges to which every country is exposed, it is fully within the scope of an enlightened public policy to encourage the manufacture of weapons for its efficient prosecution. But private war—the rude and sanguinary conflict of members of the same community with each other—stands upon an entirely different footing. It is everywhere denounced under heavy penalties, so that the blow can only be justified when it has been stricken in *self-defence*. This plainly-marked distinction determines the character of the weapon whose manufacture can claim the fostering care of the government. There can be no difficulty in deciding to which class the one under consideration belongs. It puts forth no pretensions to rank as an instrument of national warfare. In this higher walk of human carnage it would be as lame and impotent as would be an ordinary squirt in the presence of a conflagration. Nor is there any mechanical pursuit in which it could possibly be employed, nor any household or personal want to which it could possibly minister. It is, intrinsically, in its inception, and consummation and aim, a weapon of ferocious personal conflict, whose function is that of brutal mutilation. To bring it, then, within the range of the principle laid down, it must be shown that however cruel may be its mode of operation, yet from its structure and the manner in which it will be wielded, its mission upon the arena will be that of *self-defense*. Can this be done? In the first place, its deceptive form, quieting all apprehension, incites him who wears it to assaults upon others, by securing to him the advantages of a perpetual ambuscade. On the other hand, for the same reason, instead of repelling, it tends rather to invite attacks from others, by falsely presenting to them a seemingly unarmed front. When to this is added the consideration that disguise is ever a stratagem of the aggressor, and that he who, in good faith, seeks only his own defense, practices no concealment, we are forced to the conclusion that this policeman's club would be most generally wielded by men of violence and crime, and would play the part rather of the assailant than of the assailed. The fact that it *could be* used for purposes of defense does not meet the stern exactions of the principle to which I have adverted. In determining the morality and policy of encouraging the fabrication of a weapon, the inquiry is not what use *might* be made of it by officers and law-abiding citizens, but to what purpose, in view of its peculiar characteristics, *would it* most probably and most generally be applied.

The government of almost every civilized people has striven, with painful anxiety, to repress the habit of wearing concealed weapons. With none of the frankness which distinguishes true courage, it is a usage whose fruits have been evil, and altogether evil, and which has written its own sad history in the blood of some of the purest and noblest men of the times. But of all concealed weapons, the concealment of this is the most cunning and complete. In its spirit it is not merely unmanly, but skulking, and shocks, by the meanness of its cowardice, not only the chivalry, but the civilization of the age. With an inoffensive form, its polished yet simple exterior seems radiant with the smile of peace—but it is a smile destined to prove but the dagger's gleam before it stabs, for all who trust it. No deceit could be more subtle or profound than the crouching of its lurking spear points, which display, in the suddenness of their spring, the mingled ferocity of the tiger and the treachery of the kiss of Judas. Whether viewed as a weapon of offense or of defense, it is adapted to the hands only of the most dissolute and the most dastardly, and evidently belongs to the same class with the slung shot of the burglar and the brazen knuckle of the political ruffian. The national honor would not be more tarnished by granting a patent for the one than for the other.

Let the application be rejected.

J. Holt, Commissioner.

[The aim of the laws of every civilized country is to protect the mass, the majority, who are peace-loving, honest citizens, from the attacks of the murderer, the burglar, the rowdy and ruffian, by arresting and punishing such persons, and by the example of their punishment preventing others from committing the same crimes. Means must be adapted to the ends contemplated by the law, and if, in the attempts which are made to enforce it, deficiencies are discovered, it is the part of true wisdom and true humanity to seek out the proper remedy, and vigorously apply it. A mock philanthropy, in some instances, seems to have misunderstood this position, and so executed the law as to have brought it into abject contempt. Crime and rowdyism are ever present, as a kind of parasitic fungus on the otherwise healthy plant of civilization, and as a check to this, to prevent it tainting the whole tree, we are compelled to adopt the protective agency of a police force and a formulary of justice, by and through which society may demonstrate its repugnance, and award a sentence for every crime committed. These common principles of social and political economy are by every one admitted, and are the foundation-stone of all criminal jurisdiction. The judges of our courts are specially provided with a staff of men, adequate to protect them while in the exercise of their high functions; and the most summary measures would be taken, should there be necessity, to defend their persons from assault. Should not, then, the policeman while in the exercise of his functions, surrounded by, and brought in bodily contact with, the worst of characters, be provided with a potent means for his own defense?—both judge and policemen being but officers for the enforcement of the law. This being the case, it is the duty of every citizen and all branches of government to grant their protection and fostering care to any instrument, concealed or open, to any device, innocent or cunning, that can (with due regard to the safety of the people) be practically demonstrated to be a protection and defense for the officers of the law. We do not, as Commissioner Holt, in his eloquent and chastely poetic report on the case of John McLarty's policeman's club, seems to imagine, advocate the providing of any man, or body of men, with offensive arms or armor—with methods and devices for the indiscriminate sacrifice of human life—such as the "stiletto of the bravo," or the "slung shot of the ruffian," instanced by the Commissioner, and which, in this city, are not confined to ruffians, bravos and political partizans, for those weapons, with the addition of concealed fire-arms, are every day and hour carried through the streets of New York by honest and respectable citizens. Why is this? It is be-

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cause garroters walk our streets, and fell men in the public places at noonday; the public know that a policeman is no better armed than themselves; and the majority of those who gain their dishonest living by robbery and degradation, are able, when banded together, to wrest a policeman's club from his hand, and use it with terrible effect against its lawful owner, and therefore the public feel that they must be prepared to defend themselves.

One of the daily papers, a few days since, adopting the language of the Commissioner of Patents in reference to this club, published it as "a minature infernal machine;" yet while we are engaged in writing this article, the same journal is before us, giving an account of two policemen in different parts of the city, on the *same* night, while engaged in the performance of their duty, who had their clubs wrested from them, and used with murderous effect against themselves. One of them is not expected to live, and the other is severely injured. These are common occurrences, and a remedy against their repetition is loudly called for, in the name of humanity. The cases referred to would never have occurred had the officers been provided with this "miniature infernal machine."

Let us now take the Commissioner's report and test its correctness, as applied to the case under consideration—and we would here remark that the inventor is neither a ruffian, a bravo or Thug; we state this to correct a misapprehension on the part of some who have called upon us to obtain information in regard to the inventor and his *supposed* murderous weapon; for his sole intention in endeavoring to obtain a patent was to control the manufacture, and to supply them only to such persons as would be authorized by law to possess such an instrument of defense. The Commissioner, with a manly humanity that does him credit, objects to the brutality of it. Now we deny its brutality, and say that a "single wrench of the weapon" would not create "a most fearful mutilation in the hands of the person who grasped it." We would show all kindness to the most depraved of our fellow men, but the depraved are not entitled to our *first* consideration; and although points about one-quarter of an inch long could not inflict "a fearful mutilation," they cause sufficient pain to induce the aggressor to relax his hold on an instrument not his, but in holding which he is committing a great crime, in attempting to hinder an officer in the performance of his duty.

The Commissioner allows there is sufficient *novelty* to entitle it to a patent, but that it is not *useful*; and novelty and utility must be clearly demonstrated in any article for which a patent is claimed. This is the key-note of the Commissioner's objection, and his whole report is but a series of objections to its utility. We are glad he has taken this ground, and willingly meet his decision on its own premises. In direct but respectful opposition to the Commissioner, we declare it a useful invention, and by every law of precedent, the inventor is clearly entitled, in our judgment, to a patent.

We are not sufficiently well posted in criminality and crime to question the opinions of the Chiefs of Police in this city and Boston, who have given in their written testimony declaring their opinion that it is a useful invention; but we maintain that their opinion on this matter, deduced as it is from much practical experience, is of more value than that of the Commissioner or our own. It is more to the interests of society *that a dozen ruffians should get their hands scratched in doing an unlawful act, than that one policeman should suffer the slightest injury by being deprived of his club.* That some such means as this are necessary, every one must allow, and what is necessary must be useful. If any one has any doubt of its utility, let him read the daily papers, and take cognizance of the outrages that are perpetrated, the assaults committed, the murders accomplished in our cities, while the policemen are set at defiance, because so easily disarmed, and placed at the tender mercies of a "band of rowdies, bravos and political ruffians," who are in the habit of regarding policemen as their personal enemies, and treating them as such.

But, says the report, "it is a concealed weapon." Granted: so is the simple club when carried in the pocket; so is a Colt's revolver, when concealed about the person; so is a sword-cane, the most deceptive of all; so is a cane-gun, for which a patent has recently been granted. These three latter are *killing* concealed weapons of offense as well as defense; and yet the government of nearly every enlightened country has granted patents for them, while in that country which we think is the most civilized of all, a patent is refused for a weapon that cannot seriously wound when used as a simple club; for the part desired to be patented cannot be used when acting on the offensive, but is so constructed that the aggressor brings the punishment on himself,

We do not approve of the system of carrying concealed weapons; but when it becomes an absolute necessity so to do, we hold that every man has a right to protect his own person and property in any manner which he thinks best, even to the wearing of an anti-garrote collar, bristling all over with spikes. It is compatible with the institutions of our country to protect the weak and preserve order, to enforce the laws, and punish evil-doers; and the national honor would be burnished, not tarnished, by giving a protective right to any instrument that will aid in doing this, and no officer of public justice will ever assert otherwise than that such would be done by McLarty's policeman's club.—Eds.

Catacombs—Great Deposits of Phosphate of Lime.

The term "catacombs," given to depositories of the dead, is said to have been first applied to the tombs of the early Christian martyrs of Rome. Some catacombs are very ancient, such as those of Thebes in Egypt, built more than three thousand years ago. The most famous modern catacombs are those of Paris, which extend under that city, over a space of two hundred acres. They were formed out of subterranean quarries, which in 1777 were set aside for this purpose by the government. Their wide entrances had but to be walled up, and proper doors made, and they were ready for their intended purpose. The bones of the dead from the various old cemeteries around Paris were then conveyed in carts during the night and deposited in them. Since then the bones of the victims of the Revolutions, from 1789 to 1830, have also found a place there. In these depositories of the dead, huge piles of human bones, from which all the animal matter had decayed before they were placed therein, are now reduced to phosphate of lime, the most valuable of all fertilizing materials. They emit no smell whatever; persons may walk through long avenues surrounded with these memorials and remains of former generations without feeling the least disagreeable odor.

The American Industrial Association.

The above named society was formed in the month of May, 1856, its objects are to improve the condition of the working classes in this city, by finding employers for the unemployed poor in the West, and sending them to their several destinations. Its aims are excellent, because they are founded on the principle of immediate practical benefit and relief to the unemployed, by sending them where they can be useful to themselves and others. The executive committee is composed of some of the most respectable persons in our city, and the Rev. D. R. Thomason, 67 Greenwich street, is corresponding secretary, and will promptly attend to applications by employers in the West, furnishing evidence of good standing in their communities, and enclosing two postage stamps. This society is supported entirely by voluntary contributions, and deserves, we think, the patronage of all those who wish such a cause success, and who are able to assist in furthering its objects.

The Accident at the Launch of the Great Eastern.

The accident which occurred at the attempted launch of the above-named steamship—now named the *Leviathan*—by which one man was killed, was caused by a circumstance which has not yet appeared in any account given of the affair. At the inquest held on the body of the deceased operative, Mr. Brunel gave testimony to the effect that the running away of the check-drum handle, which struck the deceased, was owing to the circumstance that he had under estimated the motion of the vessel, and had too light a pressure upon the brakes. He said: "I ascribe the accident to the ship being moved more freely than we had expected, and to the brakes not having been on so hard as we should have them on when the launch is next attempted. I may say that I blame myself, for I did not anticipate the handles would have gone round so rapidly." This testimony says a good deal for the candor of the great engineer, but reflects somewhat upon his forethought.

Ancient Glass Manufactures.

Among the Egyptians, glass-blowing—long supposed to be a modern art—was carried on in great perfection. Glass was also cast, engraved and cut, and precious stones imitated successfully in that substance. Among the most beautiful productions of this manufacture were their richly colored bottles with waving lines, and their small inlaid mosaics. In these last the most delicate designs were made; and such was the fineness of the work that it must have required a strong magnifying power to put the parts together, as it does now to examine them, particularly the feathers of birds, the hair and other intricate details. They were composed of the finest threads or rods of glass—attenuated by drawing them when heated to a great length—which having been selected according to their color, were placed upright side by side, as in an ordinary mosaic, in sufficient number to form a portion of the intended picture. Others were then added until the whole had been composed; and when they had all been cemented together by a proper heat, the work was completed. Slices were then sawn off transversely, and each section presented the same picture on its upper and under side.

Segar Machine.

We extract the following from the London *Mechanics' Magazine:*—

"A paragraph has been going the round of the provincial papers, stating that M. Praetorius, of Berlin, has 'constructed' a machine for making segars, and that it rolls out 5,000 segars a day, and economises both tobacco and manual labor. Upon the admitted principle that 'honor should be given to whom honor is due,' it is only right to state that the paragraph in question is not quite correct. It is true that M. Praetorius, of Berlin, possesses such a machine, and that it combines all the useful qualities attributed to it; but it was from Liverpool that it was obtained. America claims, and is entitled to, the honor of the invention; but, many years ago, a Liverpool firm, James Steel & Co., 78 Duke street, purchased the patent, and subsequently made considerable improvements in its construction and working. The patent has many years yet to run, and it is still in the hands of the house just mentioned, who have the exclusive right of using it or permitting its use in the United Kingdom. M. Praetorius, of Berlin, purchased his machine from a firm in Hamburg, to whom Messrs. Steel & Co. had sold it, and it has since been patented for the kingdom of Prussia. There can be no doubt of the ingenuity and value of the machine; but while a foreign manufacturer only buys it, he must not be allowed to steal the honor of *construction* from England, or *invention* from America."

Missouri Wine.—In Missouri there is a German colony occupying nearly a whole county, where the vine is the principal object of culture. The vintage this year is reported to have been remarkably successful, and the yield will be about 100,000 barrels of wine.

Dovetailed Building Stones.

Experiment has shown that great strength may be given to masonry, in all the usual constructions on land and in water, by causing the pieces of the solid material itself to dovetail and bind together. Acting on the principle involved in the results thus produced, a London builder has proposed some new forms of stones, so contrived as to afford superior binding power from the fact that, when structurally put together, they are tied to one another in all directions. Each block is cut in such a shape that only four sides of it form a parallelogram, its upper and lower sides being formed each by two inclined planes, which incline towards each other from the edges towards the middle, in such a manner respectively, that the direction of the furrow that is formed by the two inclined planes of the one (upper) side forms a right angle with or crosses the direction of the other or lower side.

The Milky Way.

This is a great luminous band which stretches every evening all across the sky. At one part it sends off a kind of branch which again unites with the main body after remaining distant for about 150 degrees. This remarkable belt has, from the earliest ages of which we have any record, maintained the same place among the stars; and when examined through a powerful telescope it is found to be composed of myriads of glittering stars, scattered in groups of millions, like glistening dust, on the black ground of the general heavens. Sir William Herschel has divided it into a number of nebulous systems, or separate clusters of stars, and has described their appearances and shapes; but, as yet, it is to us but the shadowy outline of another branch of astronomical research which will require more powerful instruments and more human genius than is now at command, for its exploration.

The Hard Times have finally seized hold of various portions of Europe, and a regular panic has set in, similar to the one from which we are now recovering. In spite of these disasters, Munn & Co. continue to pay. On the 1st of January next, they will begin to distribute Fifteen Hundred Dollars to those fortunate individuals who succeed in procuring the largest lists of subscribers, viz.:—$300 for the largest list, $250 for the second, $200 for the third, and so on, down to $20, which sum is for the smallest out of the entire fifteen. Many an honest, hard-working mechanic will be glad to get even the smallest prize. Only one month remains, and still the lists already sent in are not what they ought to be in view of the generous premiums we offer. Go to work, friends, and do all you can for your favorite journal; your pay is sure.

Forty-Three Patents have been issued within the past three weeks to inventors whose papers were prepared at the Scientific American Patent Office.

We are confident that such success is without a parallel in the history of any other patent agency.

The advantage of our Washington Branch, and our vigorous prosecution of rejected cases, are telling with wonderful effect upon the interests intrusted to our care. The management of the Patent Office is liberal and comprehensive, and the various Examiners are industrious and capable.

Preliminary Examinations are generally recommended when inventors wish to apply for patents through the Scientific American Patent Agency. Upon the receipt of a sketch and description of the invention, and a fee of five dollars, we cause a thorough search to be made at the Patent Office in Washington by our Branch Agency, and prepare a careful report setting forth the prospects likely to attend an application for a patent. A circular embracing more particular advice is sent free, upon application at the office of the Scientific American.

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Correspondents

J. H. C., of Pa.—Your communication has been received, and will be attended to next week.

C. B., of Mass.—We are not acquainted with the gas apparatus referred to in the extract you have sent us. Probably it is similar to the portable rosin oil gas generators, some of which are very excellent for small factories and public buildings. Illuminating gas can be made from any refuse grease, in a common retort, just as well as the one mentioned in the extract.

S. F. C., of La.—Pewter is very malleable and ductile; it is composed of 80 parts of tin and 20 of lead by weight, fused together with frequent stirring.

B. J., of Mo.—The micrometer is a small instrument adapted to a telescope for the purpose of measuring short distances, or the diameters of objects which subtend very small angles, as those of the heavenly bodies. Its name is derived from two Greek words signifying a small measurer.

W. H. D. C., of N. H.—An excellent place for you to receive a thorough training in civil engineering, would be at Union College, Schenectady, N. Y. Professor Gillespie's works on Surveying and Roadmaking are good. Professor Mahan on Civil Engineering is also an excellent work.

M. M. H. C. W., of C. W.—You will find the alloy you mention on page 76 of the present volume, and you must have confounded it with an article on silicun on page 64. By referring to them both you will discover all you wish to know.

W. S. H., of Ct.—We do not know anything about the patent to which you refer. All patented machines must be so stamped. If this is not done, the inference is strong that no patent has ever been granted.

J. T. McG., of Md.—Acids are not employed for polishing the barrels of rifles. Emery and oil are used for this purpose, and they are finished by the use of a burnisher or polishing tool.

J. D. B. of Ala.—The two wings of the new capitol at Washington are not, as we understand it, of precisely the same order of architecture as the old building, but there is a tolerable unity of design preserved in the addition. We have not at hand just the information you want on this subject, but no doubt at the proper time a full account of the buildings will be published.

H. A., of Ohio.—The mode of setting eccentrics depends much upon the form of the valve, and whether you want any lead. If the valve has no lap, and no lead is desired, the eccentric should be at right angles to the cranks of their respective cylinders, and the valves will then commence opening the steam ports as the cranks pass the center. A little lead is, however, desirable, and this requires the eccentrics to be set a little in advance of the above mentioned position. You had better consult come good work on the steam engine, as this is one of the most important parts of the engine. The Artisan Treatise, by John Bourne, is a very good work.

M. M., of Wis.—We are prepared to push forward your application for a patent on the shingle machine improvement with vigor as soon as we receive the model. The business of the Patent Office is going on with accumulated energy under the new Commissioner, and we think inventors generally will have no occasion to complain of its management.

H. G. F., of Ill.—We have been assured by a practical plasterer and builder that plaster dried rapidly and thoroughly by freezing makes as good walls as that dried during warm weather. We have never tried the experiment ourselves, but would prefer walls plastered in summer to those so treated during frosty weather.

H. C., of Ohio.—We cannot encourage you to spend money on an application for a patent on your alleged improvement in barrel machinery. The combination of the cutting head with the shifting gear is not new. The preliminary examination shows valid references against your claim, and we cannot expect to succeed where there is so slight a chance to found a claim. We thank you for the generous list of subscribers. Send in all the names you can procure before the 1st of January, at which time we shall publish the award of our prizes.

W. P., of Ky.—In some parts of the world where steam power is not much used, and large pumps but little known, it is common to use an Archimedes screw for elevating water. It was first used by the philosopher whose name it bears, for raising water and draining land in Egypt. It consists of a large tube coiled round a shaft of wood to keep it in place and give it support. Both ends of the tube are open, the lower one dipping into the water to be raised, and the upper one on the machine being turned, pours out an intermitting stream. The shaft turns on a support at each end, the upper support being elevated in the air, and the lower one is immersed in the water.

E. C. M., of N. B.—Your idea of a thermometer is quite an old one. What is known as the pyrometer, which is a thermometer for very high temperatures, is on this principle.

W. W. S., of N. Y.—Without suitable engravings it would be impossible for us to furnish an intelligible description of the machinery used in the manufacture of envelopes. You can address Robert McNie, 39 Greene street, this city, who manufactures the most improved machines for cutting envelopes.

J. H. J., of Texas.—We cannot offer you the slightest encouragement to attempt to procure a patent on your rotary engine. It does not contain novelty sufficient to justify an application, besides, we do not discover any useful feature in the arrangement.

J. H. S., of Ind.—It would be very desirable to have some apparatus whereby the vigilance of night-watchmen could be ascertained; and we have often wondered why some ingenious inventor has not set his wits at work to produce it. There is nothing known to us for this purpose, except the well known "tell-tale clock."

J. C., of Ind.—We do not know where you can purchase one of Baker's patent mangles. We presume however, that J. & C. Berrien, of this city, can supply one, but not the gearing apart from the complete machine.

A. H., of Ky.—We are not aware of any existing influence at Washington against the issue of a patent for your improvement. Some one has started this report, no doubt, with a view to alarm you. No such influence as you speak of could have the slightest weight with the Commissioner; and we can assure you that your interests in our hands will be faithfully guarded.

C. M., of Mass.—No amalgamation can take place between the copper and iron by Oudry's system of coppering or electro-plating, because there is a coating of varnish interposed between them. The process is one of common electro-plating, and is described in every work on that subject. If, instead of using a bag, you had employed porous earthenware vessels, you would have been quite successful.

J. S., of C. W.—We perfectly appreciate your complaint that books on botany and science generally use hard and technical words, without deigning to explain them. We earnestly wish a reform could take place in scientific literature; until it does, however, we shall be happy to be able to act as interpreters to our enterprising correspondents, who have to fight with many difficulties ere they can pluck a single blossom from the tree of knowledge. The vascular tissue of plants consist of simple membraneous tubes, tapering to each end, but often ending abruptly, either having a fiber generated spirally on the inside, or having their walls marked by transverse bars, arranged more or less in a spiral direction. There are two principal kinds of vascular tissue, viz., spiral vessels, and ducts, or leaders. The former present the continuous spiral fiber, and are capable of unrolling with elasticity; the latter present transverse lines, rings, or bars, and are incapable of unrolling without breaking.

J. H. B., of Ind.—The term or prefix *sesqui* in chemistry is an abbreviation from the Latin word *semisque*, signifying "and a half." It is used to denote one body combining with another body not in equivalent proportions, but in the proportion of one to one and a-half; it is, however, usual to state such a combination as two to three; as, sesquioxyd of iron—meaning two equivalents of iron combined with three of oxygen; also sesquicarbonate of alumina—signifying two equivalents of alumina to three of carbonic acid; and the same in many similar cases.

L. A. J., of Va.—In geology the word "rock" denotes the solid parts of the crust of the earth, composed of a single mineral species, or two or more species. One or several rocks united by certain common characters, constitute a "formation," or connected series, and several formations constitute a system of rocks. Rocks have been distinguished, according to ther physical peculiarities, into the plutonic, the aqueous, and the volcanic rocks.

K. J., of Mich.—Corundum is a stone found in India and China; it crystalizes in six-sided prisms, and has, from its hardness, been called adamantine spar. The amethyst, ruby, sapphire, and topaz are considered varieties of this spar, differing chiefly in color. These are termed Oriental gems; but the same names are applied to stones from other countries.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, November 28, 1857:—

H. B., of N. Y., $388 25; W. M., of Ky., $5; B. & H., of Ill., $25; H. T. S., of R. I., $25; D. G., of Pa., $15; F. L. W., of S. C., $30; J. V. J., of Mich., $25; E. W., of Pa., $55; J. E. H., of N. Y., $25; V. R. D., of Ill., $30; D. E., of Ohio, $25.

Literary Notices.

EMERSON'S MAGAZINE AND PUTNAM'S MONTHLY for December, contains a great variety of good and interesting matter, such as cannot but afford the reader a fund of information and amusement. The article on American Contributions to Science is ably written, and has evidently been compiled by one well acquainted with his subject. This magazine has decidedly improved in tone and character since the two above have become one.

BRANSTON'S HANDBOOK OF PRACTICAL RECEIPTS.—Lindsay & Blakiston, Philadelphia. A most useful book, full of condensed information on just those subjects which every one wants to know, as it tells you what the majority of compounds are, and how to make them.

THE EDINBURGH REVIEW—Leonard Scott & Co., New York—for this month, has in it an excellent article on Napier and another on India, besides reviews and essays of and on various subjects. It is a most interesting number.

TO OUR SUBSCRIBERS.

RECEIPTS—When money is paid at the office for subscription, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a *bona fide* acknowledgment of the receipt of their funds. The Post Office law does not allow publishers to enclose receipts in the paper.

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No. 128 Fulton st., New York.

The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents:—

MESSRS. MUNN & CO.—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers.
Yours, very truly, CHAS. MASON.
August 14, 1857.

AGENTS WANTED IN ALL THE CITIES and towns throughout the United States, to sell Wright's Patent Sectional Spring Bed Bottom. Address W. WRIGHT, No. 102 West Fortieth street, New York City.

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For the largest List	$300
For the 2d largest List	250
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For the 10th largest List	50
For the 11th largest List	40
For the 12th largest List	35
For the 13th largest List	30
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For the 15th largest List	20

Names of subscribers can be sent in at different times and from different Post Offices. The cash will be paid to the orders of the successful competitors immediately after the 1st of January, 1858. Circulars giving further particulars may be had gratis by sending to the publication office, 128 Fulton street.

We hope our friends in the country will avail themselves of the above liberal offer, and while they oblige us they will be benefited to a far greater extent themselves. MUNN & CO., Publishers.

☞ See Prospectus on the next page.

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Science and Art.

More Sorgho Sugar.

Since our last issue, we have received another sample of crystallized sugar made from the juice of the Sorgho sugar cane, by D. M. Cook, of Mansfield, Ohio. By the use of a peculiar evaporator, he states that he found no difficulty in crystallizing the syrup of this cane. He asserts that the Sorgho can be ripened throughout all the Northern States, and that its juice is as crystallizable a saccharine product as that of the common sugar cane. He also affirms that with proper cultivation it will yield 1,000 pounds of sugar to the acre, and may reach double this amount. At five cents per pound, this will be $50 per acre, or $5,000 for one hundred acres. If this be so, the next question is, at what cost can it be raised and made into sugar? It requires as much skill, care and expense to cultivate and secure it as corn, and after this it will cost as much more to express its juice, concentrate it, and bring it into a crystallizable condition. We are still of opinion that it never can compete with the genuine sugar cane grown in the Southern States for yielding juice, but we earnestly hope it may.

The Highest Mountain in the World.

An interesting paper was recently read before the Academy of Sciences in Paris, on an expedition sent out to the East Indies in 1854, by the King of Prussia, for scientific purposes. The members of the expedition consisted of three brothers, namely, Hermann, Adolphus, and Robert Schlagentweit, two of whom returned last year; the third, Adolphus, is still exploring among the Himalaya Mountains, but is expected to return soon. During the winter of 1854-55, these enterprising travelers visited the region lying between Bombay and Madras; in the following summer Hermann explored the eastern part of the Himalaya, the Sikkim, Bhootan, and Kossia mountains, where he measured the altitudes of several peaks. The highest of all the summits known throughout the world appears by his measurements to be the Gahoorishanke, situated in the eastern portion of Nepaul—the same announced as such by Colonel Waugh, but called by him Mount Everest, because he had been unable to ascertain its real name in the plains of Hindostan. This peak is somewhat more than 29,000 feet in hight. The other two brothers, Adolphus and Robert, penetrated by different roads into the central parts of the Himalaya, Kumaon, and Gurwahl; they then visited Thibet in disguise, and ascended the Ibi-Gamine, 22,260 feet in hight, that being, we believe, an altitude never before attained in any part of the world.

The chief results obtained from this careful exploration of Asia are the following:—The Himalaya mountains everywhere exercise a decided influence over all the elements of the magnetic force; the declination everywhere presents a slight deviation, causing the needle to converge towards the central parts of that enormous mass, and the magnetic intensity is greater than anywhere else under an equal latitude. Irregular local variations in terrestrial magnetism are rare in these regions. In the Deccan and Bahar the rocks are magnetic. On the Himalaya, at altitudes of 17,000 and 20,000 feet, the daily *maximum* and *minimum* variations of the barometer occurred nearly about the same hours as in the plains below.

Great storms of dust frequently occur in India, during which the disk of the sun appears of a blue color; if small bodies are made to project their shadows on a white surface under such circumstances the shadow is of an orange color, which is complementary to blue.

The travelers also tested the transparency of the rivers Ganges, Indus, and Burrampooter. By carefully lowering a white stone into them, they found that it became invisible at a depth varying from six to ten inches, thus showing that these waters are highly charged with earthy particles, for in the still waters of the sea at the tropics, such a stone is visible at a depth of thirty feet, and in Lake George in the northern part of the State of New York, a white stone may be seen at a depth of from thirty to forty feet.

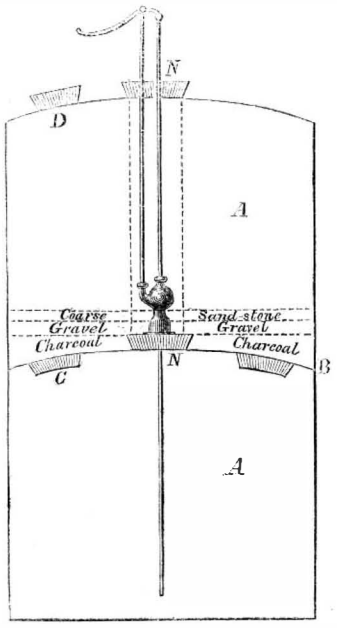
Cistern Filter.

Messrs. Editors—Noticing your reply to R. D. C., of Mo., I send you the enclosed sketch of what I consider the best plan for constructing a filtering cistern. Many (and in cities particularly) are dependent upon cisterns for their supply of water, and in times of drouth the roofs become very dirty from dust and coal smoke, and unless the water is filtered, would be unfit to use; but to filter it properly so as to remove every particle of dirt the water must percolate through the sand and gravel in drops. Now, in your small box arrangement, and a heavy dashing rain, a large amount of water is lost, or, if not, it is but little better for the filtering it has received, as it has passed through too rapidly. In the plan I propose, no water is wasted, and the filtration is perfect; and, again, it has another advantage, it admits of the use of a cast iron force or lift pump in any weather, and if generally adopted, there would be many more force pumps used than there are now, owing to their liability to freeze, and become perfect nuisances in winter.

S. H. Holmes.

Portsmouth, Ohio, Nov. 9, 1857.

[We have engraved the drawing of our correspondent, and it will be seen to be a very simple arrangement. A is the cistern, B a crown dividing it into two compartments, N the



necks of the upper and lower crown; on each side of the pump are square cast iron pans, C, with perforated bottoms, three or four of them being built in the lower crown, and their perforations to be covered with coarse flannel. D is an extra neck in the top crown to repair the pump or renew the filter. This filter can be used with a chain pump, by making a water tight box from the lower to the upper neck.

It is a very good and simple contrivance, and we have no doubt that it will answer well.—Eds.

Imitating Skins of Animals upon Fulled Cloth.

A patent has recently been taken out in England by James Murdoch, of London, for a process to accomplish the object indicated by the above caption. It consists in imitating the furs and skins of animals in a more perfect manner than by any of the cloths now designed for this purpose, by simply printing such fabrics before they are dressed, instead of printing them afterwards as is now done. After the cloth has left the fulling mill and is dried, it is carded slightly, then printed to imitate the particular skin or fur desired. When the printed colors have become sufficiently dry, the cloth is moistened with water and beat by means of rods to raise the nap, after which it is shorn and dressed in the usual manner. By this simple change, for that is all it can be called, in the process, the prints of the spots, stripes, or whatever marks may be employed to imitate furs have not those defined sharp outlines common to the old process, and which give them an appearance more artificial than natural.

Another modification of this invention is applied to imitate the skins of animals having wavy or frizzled hair, such as the Astracan fur. After the cloth is printed, and beat in the moist state as has been described, it is subjected to severe pressure in a hydraulic or other powerful press, steam being admitted into the box in which the cloth is contained under pressure. This process flattens out the upright hairs which have a natural tendency to spread in all directions, and produces a surface resembling curling—very like Astracan fur—which the subsequent common operations of carding, shearing and dressing the cloth will not remove.

Which are Best—Plain or Ornamental Stoves?

Messrs. Editors—Everybody knows that there is always a current of hot air ascending close to the sides of a heated stove. A friend, who professes to be well posted in the philosophy of such matters, asserts that this hot air passing off rapidly and unobstructedly *upon a smooth surface*, and mingling with the cooler air of a room, is, comparatively, healthful and innoxious; but that upon coming in contact with, and being delayed (if but for an instant), by an heated iron projection, a chemical change in the particles is produced, rendering it more or less odorous, unwholesome, and unfit for respiration. He contends, therefore, that, having regard to health, the exterior of stoves should be entirely smooth, without horizontal projections of any kind, for ornament or otherwise, and particularly that the top of a stove should not project over its sides.

What says the Scientific American to the above? I.

New York, December, 1857.

[No chemical change takes place in the particles of air brought into contact with a stove, unless its plates are red hot. Iron at a red heat decomposes the air brought into contact with it, by the affinity which the oxygen has for the metal in this condition. The oxygen leaves the nitrogen of the air and unites with the iron. However, although burned air, or that which has come in contact with the red hot plates of stoves and heaters, is very unhealthy to inhale, owing to its super-dryness, we are of opinion that it is not deprived of all its oxygen, as some writers have asserted, for if the quantity of air which is brought into contact with a red hot stove plate in one day were decomposed, that plate would be entirely reduced to an oxyd in that period. Now we know that cast iron cylinder stoves, are maintained at a red heat for months without reducing the metal to an oxyd.

In regard to the healthfulness of smooth and rough stoves, there can be no difference; but the former should be preferred, because they are much easier to keep clean and polish. The profusion of figures, projections, and intended ornaments with which most stoves are disfigured, exhibits a prevailing bad taste in those who get them up.—Eds.

Preparations for Laying the Atlantic Cable Next Year.

We learn from the London *Times* that extensive preparations are now being made for laying the cable next year, and that the attempt will take place in the month of June. It seems that the very kind of machinery for laying the cable which we recommended as essential to its success is being constructed. The *Times* says:—

"But it is principally to the improvement of the paying-out machines that the efforts of the company have been directed. Last year these machines, aided by considerable obstinacy and rashness, ruined the whole plan, and, the steed being thus effectually stolen for the present, the most tremendous precautions are now being taken to bolt the stable door. The machines are being made under the special advice and directions of Mr. Penn, Mr. Field, Mr. Lloyd, and Mr. Everett, the Chief Engineer of the *Niagara*. Messrs. Easton and Amos have been intrusted with their manufacture, which insures all that skill and experience can effect in their solid construction. With the details of the plan upon which they are to be made we are not yet acquainted further than that they are especially contrived to guard against the strain on the cable caused by the sudden pitch of the vessel, and also that the brake in the wheels will be perfectly self-acting, and so made that it will be impossible to place upon it more than about one-third of the strain which the cable can safely be relied upon to bear."

About 800 miles' length of new cable is to be made, to make up for the 400 which was lost, and to give 400 additional to afford greater allowance for winding than was calculated for in the first attempt.

Central America for Cotton.

A correspondent of the New Orleans *Picayune* asserts that the soil and climate of Central America are excellent for growing cotton. The seed is planted about the 1st of September, and always yields a sure crop, which can be raised at one half the expense entailed upon its culture in any part of the Mississippi valley. Very little, however, is raised by the indolent natives beyond the quantity required for their very limited amount of clothing.

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